Universe

Jet Propulsion Laboratory

Inside

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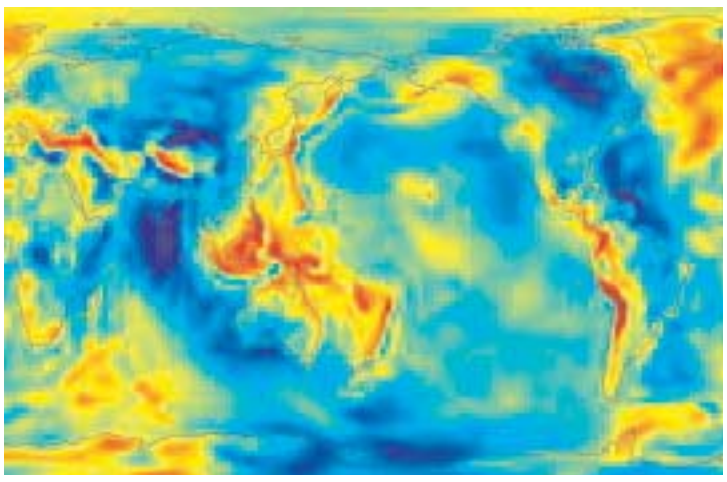
Grace quickly produces best-ever gravity map

By Alan Buis

The Gravity Recovery and Climate Experiment (Grace) mission has released its first scence product, the most accurate map yet of Earth's gravity field. Grace, which is managed by JPL, is the newest tool for scientists working to unlock secrets of ocean circulation and its effects on climate.

Created from 111 days of selected Grace data to help calibrate and validate the mission's instruments, this preliminary model improves knowledge of the gravity field so much it is being released to oceanographers now, months in advance of the scheduled start of routine Grace science operations. The data are expected to significantly improve our ability to understand ocean circulation, which strongly influences weather and climate.

Dr. Byron Tapley, Grace principal investigator at the University of Texas' Center for Space Research, called the new model a feast for oceanographers. "This initial model represents a major advancement in our knowledge of Earth's gravity field," Tapley said. "Pre-Grace models contained such large errors that many important features were obscured. Grace brings the true state of the oceans into much sharper focus, so we can better see ocean phenomenon that have a strong impact on atmospheric weather patterns, fisheries and global climate change."



Previously, the long wavelength components of the gravity field determined from satellite tracking were limited to a resolution of approximately 700 kilometers. In contrast, Grace, by itself, has provided accurate gravity information with a resolution of 200 kilometers. Now, much more detail is clearly evident in the earth's geophysical features.

Grace is accomplishing that goal by providing a more precise definition of Earth's geoid, an imaginary surface defined only by Earth's gravity field, upon which Earth's ocean surfaces would lie if not disturbed by other forces such as ocean currents, winds and tides. The geoid height varies around the world by up to 200 meters (650 feet).

"I like to think of the geoid as science's equivalent of a carpenter's level. It tells us where horizontal is," Tapley said. "Grace will tell us the geoid with centimeter-level precision."

So why is knowing the geoid height so important? Dr. Lee-Lueng Fu, Topex/Poseidon and Jason project scientist at JPL, said, "The ocean's surface, while appearing flat, is actually covered with hills and valleys caused by currents, winds and tides, and also by variations in Earth's gravity field. Scientists want to separate out these gravitational effects, so they can improve the accuracy of satellite altimeters like Jason and Topex/Poseidon, which measure sea surface height, ocean heat storage and global ocean circulation. This will give us a better understanding of ocean circulation and how it affects climate."

Dr. Michael Watkins, Grace project scientist at JPL, put improvements to Earth's gravity model into perspective. "Scientists have studied Earth's gravity for more than 30 years, using both satellite and ground measurements that were of uneven quality. Using just a few months of our globally uniform quality Grace data, we've already improved the accuracy of Earth's gravity model by a factor of between 10 and nearly 100, depending on the size of the gravity feature. In some locations, errors in geoid height based upon previous data were as much as 1 meter (3.3 feet). Now, we can reduce these errors to a centimeter (.4 inches) in some instances. That's progress."

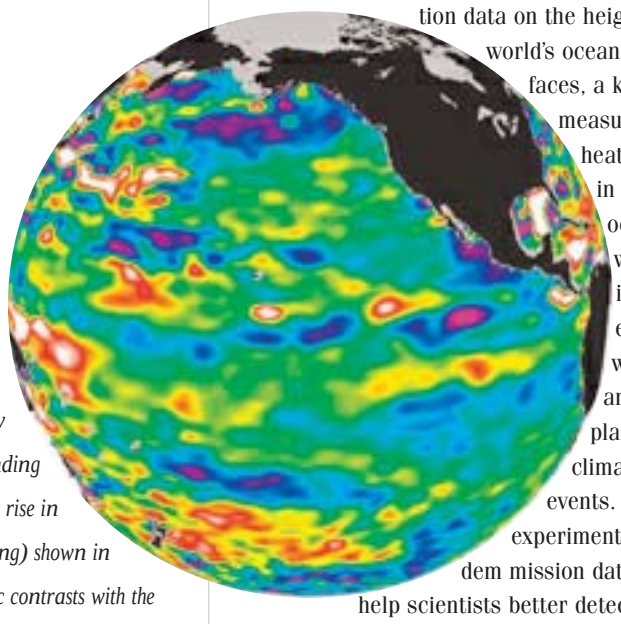
Grace, a joint partnership between NASA and the German Aerospace Center, senses minute variations in gravitational pull from local changes in Earth's mass by precisely measuring, to a tenth of the width of a human hair, changes in the separation of two identical spacecraft following the same orbit approximately 220 kilometers (137 miles) apart. Grace will map the variations from month to month, following changes imposed by the seasons, weather patterns and short-term climate change.

Jason, Topex now work in tandem

By Alan Buis

Take one well-seasoned oceanography satellite, the joint NASA/French Space Agency Topex/Poseidon, nearing its 11th year in orbit to study the world's ocean circulation and its effect on climate, mix in a fresh sibling satellite, Jason, and add a dash of ingenuity, and you get what scientists are calling the Jason-Topex/Poseidon tandem mission.

Since last September, when the older spacecraft was maneuvered into a tightly spaced orbit with Jason's, the two have engaged in a spicy experimental orbital tango. The spacecraft are serving up exceptionally high-resolution data on the height of the world's ocean surfaces, a key measure of heat storage in the ocean, which influences weather and future planetary climate events. The experimental tandem mission data will help scientists better detect and understand ocean currents, tides and eddies.



Globe shows Jason data taken in a 10-day collection cycle ending July 15. The slight rise in sea levels (warming) shown in the western Pacific contrasts with the Bering Sea, Gulf of Alaska and U.S. west coast, where lower-than-normal sea-surface levels and cool ocean temperatures continue.

In a paper in the American Geophysical Union newsletter Eos, JPL's Dr. Lee-Lueng Fu, project scientist for the Jason and Topex/Poseidon missions, reports the mission is producing ocean surface topography data that reveal twice as many details as seen before.

"The Jason-Topex/Poseidon tandem mission doubles the resolution of ocean surface topography data, creating a continuous, simultaneous record of superior-quality radar measurements that will be used to map ocean surface current speed and direction, revealing important new information about these energetic swirls that are often too small to be resolved by a single satellite," Fu said. "Tandem mission data will allow scientists to revise ocean models, improving their ability to predict ocean currents in the future."

Fu said data from the mission are expected to improve our knowledge of ocean tides in coastal and other shallow-water regions, the changing transports of boundary currents, the horizontal transport of heat in the oceans and other climate-relevant properties. Also, it may validate theories of ocean turbulence caused by the Coriolis force, a phenomenon caused by Earth's rotation that deflects moving objects, such as water or air, to the right in the northern hemisphere and to the left in the southern hemisphere.

The data may provide valuable information about ocean eddies, a type of ocean "weather." These intermediate-sized (50 to 200 kilometers, or 30 to 120 miles across) ocean features generally last only a few months, yet play an important role in transporting ocean heat. Eddies help create ocean weather patterns and transport nutrients from deep to shallower waters, where they enhance the growth of marine life.

Beyond Jason and the tandem mission, scientists are developing ways to achieve even higher resolution ocean measurements without flying multiple conventional altimeters. A Jason follow-on project, the Ocean Surface Topography Mission, may carry a Wide-Swath Ocean Altimeter. It would make wide-swath ocean surface height measurements using radar interferometry. The wide-swath instrument would provide a resolution of about 15 kilometers (9 miles) on the ocean surface, an eightfold improvement in data resolution over the tandem mission.

With Jason's instruments fully calibrated, NASA and the French Space Agency released via the Internet Jason's first high-accuracy science data products. The products represent the final, validated records of Jason altimetry data and associated background information. Scientists around the world will use these records to develop products and perform investigations. The Jason science team has accumulated approximately 50 10-day cycles from the mission. These will be reprocessed over the next several months to create a single data record for each cycle. Future records will be made available to the public about 35 days after spacecraft collection. Specialized products are available to scientists.

For more information about Jason, visit *http://sealevel.jpl.nasa.gov/index.html.*

News Briefs

Eric Rignot

Researcher receives glacier honor

JPL geophysicist ERIC RIGNOT was recently honored by having an Antarctic glacier named for him.

Rignot, of the Interferometric Synthetic Aperture Radar Phenomenology and Product Verification Group in the Radar Science and Engineering Section 334, received the honor from the United States Board on Geographic Names. He was cited for his use of field and remotely sensed data to study Antarctic glacier mechanics from the 1990s to the present.

Student projects set for Mars rovers

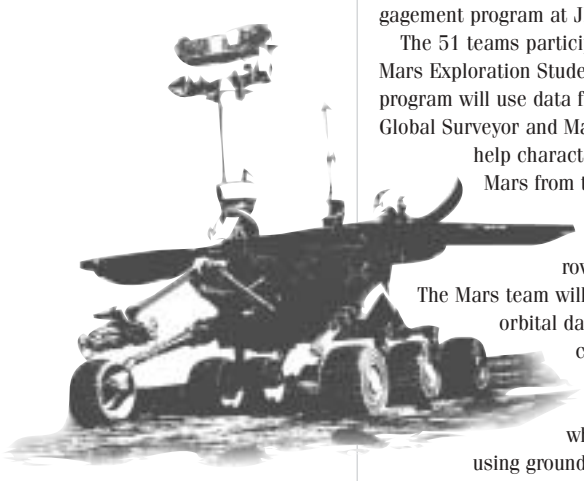
While the ultimate field trip might someday be an actual journey to Mars, NASA is doing the next best thing—giving high school teams the opportunity to explore Mars by working on specific research projects during the Mars Exploration Rover missions, set to land in January 2004.

Two programs designed to involve students in exploration and discovery enable high school teams to experience a space mission from launch through landing. Teams from 13 schools are participating in the Athena Student Interns program. The Mars Exploration Student Data Team has 51 participating schools. Advance studies will prepare the students for participating in the mission when the two rovers, Spirit and Opportunity, begin exploring Mars.

Students and teachers in the Athena Student Interns program will each spend a week at JPL while the rovers are operating on Mars, and will work with mentors from the Mars science team and aid in data analysis. Before arriving at JPL, the students will learn about Mars' geology, the scientific and mechanical capabilities of the rovers, and the software needed to visualize the data that will be returned to Earth.

"More and more, we're trying to involve students directly in our missions, to give them real research opportunities," said MICHELLE VIOTTI, manager of NASA's Mars Public Engagement program at JPL.

The 51 teams participating in the Mars Exploration Student Data Team program will use data from JPL's Mars Global Surveyor and Mars Odyssey to help characterize aspects of Mars from the atmosphere to the surface that affect the rover missions. The Mars team will help compare orbital data to rover-collected data for "ground truthing," which means using ground-level observations to verify interpretations of remote observations.



Future explorers in the Athena Student Interns Program were selected from around the country. Athena is the name of the rovers' main instrument payload, the toolkit used to analyze rocks and other features on Mars.

The Mars Exploration Student Data teams are from 24 states plus the District of Columbia and an American school in Bolivia. The two programs will closely complement each other, just as both landed and orbital science teams work closely together in planetary missions.

JPL garners funding for proposals

NASA recently selected 15 industry, government and academic organizations to pursue 22 innovative propulsion technology research proposals that could revolutionize exploration and scientific study of the solar system. Four JPL-led proposals were selected for funding for NASA's In-Space Propulsion Technology Program.

The research will be conducted in five in-space propulsion technology areas: aerocapture; advanced chemical propulsion; solar electric propulsion; space-based tether propulsion; and solar sail technologies.

Three JPL-led studies, each led by principal investigators from Section 353, were selected in advanced chemical propulsion technology. "Lightweight, Foam Core Covers for Protection of Propellant Tanks and Propulsion Components" is led by MARC ADAMS. "Ultralight Tank Technology Development for In-Space Applications" is led by JOSEPH LEWIS, with LORIE GRIMES-LEDESMA as co- investigator. "Cryogenic Propulsion with Zero Boil-off Storage Applied to Outer Planetary Exploration" is led by CARL GUERNSEY, with RAY BAKER as co- investigator.

In the solar sails area, MICHAEL LOU of Section 350 is the principal investigator for "Structural Analysis and Synthesis Tools for Solar Sails," with HOUFEI FANG of Section 353 as co-investigator.

New stop signs posted

New stop signs have been installed on Explorer Road, both east and west bound, which will create a three-way stop at the intersection of Explorer and Mariner Roads near Building 277. JPL Security cautions staff to operate their vehicles in a safe and legal manner at this re-configured location.

Entries sought for MLK quilt

Employees and affiliates are invited to participate in a quilting project for JPL's Martin Luther King Jr. 2004 celebration on Lab. Designs should illustrate King's spirit and the 2004 theme, "Personal Responsibility in a Diverse World: Share in the Experience of Pride and Equality."

Submissions should be on a 6" x 6" sheet of white paper. Designs are due Monday, Aug. 25, to LAURA WHITE, mail stop 201-203. For more information, call her at ext. 3-5441.

Ethics training through Sept. 30

All JPL employees are required to complete Ethics training by Sept. 30. Numerous classes are still available, and are listed on the Daily Planet (*http://dailyplanet*).

All classes last one hour. Registration is not required; just remember to bring your badge, which is scanned to verify attendance.

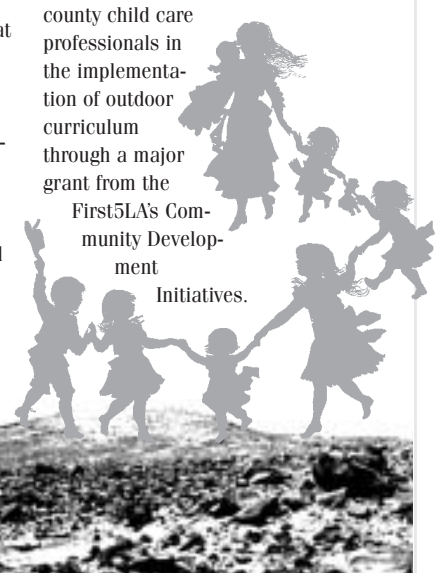
Online training is also available at the Ethics website (*http://ethics*).

CEC receives re-accreditation

The Child Educational Center (CEC) has earned its re-accreditation from the National Association for the Education of Young Children (NAEYC), the nation's leading organization of early childhood professionals.

"We're proud to be accredited by NAEYC, and recognized for our commitment to reaching the highest professional standards," said Executive Director ELYSSA NELSON. "The accreditation lets families in our community know that children in our program are getting the best care and early learning experiences."

The CEC provides quality child care to more than 600 infants, toddlers, preschool and school-age children of JPL and Caltech families as well as families from the surrounding community. The CEC also serves as an observation and practicum site for college students in the early childhood education field, and will soon be educating Los Angeles county child care professionals in the implementation of outdoor curriculum through a major grant from the First5LA's Community Development Initiatives.



Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Group—Meets the first Friday and third Thursday of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in the Wellness Place, Building 167-111.

Working Parents Support Group—Meets the third Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Tuesday, August 5

ACW Career Panel—Line management careers is the topic for this discussion, continuing the Advisory Council for Women's summer series. Join scheduled speakers Mary Bothwell (Section 380), Amanda Beckman (266), Dr. Andrea Donnellan (320), Cindy Kingery (510) and Leslie Livesay (340) at noon in von Kármán Auditorium.

"Ask the Experts About E-Mail"—At 2 p.m. in Building 180-101, Virinder Dhillon and Rebecca Martinez will discuss how JPL e-mail can now be accessed from a Web browser when you are on travel or away from your office computer. See a demo of this new feature and find out how it can facilitate your work. The talk is sponsored by Institutional Computing and Information Services.

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

Wednesday, August 6

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

Thursday, August 7

JPL Gun Club—Meeting at noon in Building 183-328.

Tuesday, August 12

JPL Stamp Club—Meeting at noon in Building 183-328.

Wednesday, August 13

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Debbie Llata at ext. 3-3690 for information.

"Succeed Over Stress"—This class offered by the Employee Assistance Program is designed to provide an educational and experiential opportunity on how to manage stress effectively and maximize coping skills during periods of uncertainty and high work demand. It will be held from 9 a.m. to noon in Trailer 1707. To enroll, go to the Education and Training website (*http://hr.jpl.nasa.gov/et*), choose the Professional Development category, search for "Succeed Over Stress," and complete enrollment information. For more information, call the Employee Assistance Program at ext. 4-3680.

Thursday, August 14

ACW Career Panel—The final in a series of five panels sponsored by the Advisory Council for Women, held at noon in von Kármán Auditorium, will cover science careers at JPL. Join scheduled participants Dr. Claudia Alexander (4033), Dr. Joy Crisp (3223), Dr. Candice Hansen (3222), Dr. Paulett Liewer (326) and Dr. Carol Raymond (3223). Come and listen to their stories of career opportunities and advancement, both lateral and upward. Prepared questions and questions from the audience will be answered.

By Lisa Townsend

JPL's Galaxy Evolution Explorer has beamed back revealing images of hundreds of galaxies to expectant astronomers, providing the first batch of data on star formation that they had hoped for.

The recent ultraviolet color images from the orbiting space telescope were taken between June 7 and June 23, 2003 and are available online at *http://www.galex.caltech.edu* and *http://photojournal.jpl.nasa.gov/new*.

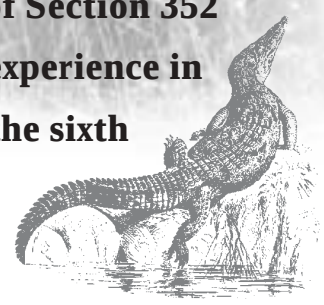
"The images clearly show active star formation in nearby galaxies, and large numbers of distant ultraviolet galaxies undergoing starbursts," said Principal Investigator Dr. Christopher Martin, an astrophysics professor at Caltech. "This demonstrates that the Galaxy Evolution Explorer will be a powerful tool for studying star formation in galaxies near and far."

"These stunning images provide us with valuable information needed to advance our knowledge of how galaxies, like our own Milky Way, evolve and transform," said Project Manager Dr. James Fanson. "Pictures of the ultraviolet sky reveal objects we could never have seen with visible light alone."

The Galaxy Evolution Explorer launched on April 28, 2003. Its goal is to map the celestial sky in the ultraviolet and determine the history of star formation in the universe over the last 10 billion years.

Rocket Scientist

SURVIVES AMAZON



JPL's own Dave Johnson of Section 352 shared with Universe his experience in "Survivor: the Amazon," the sixth in the Survivor series.

By Angela McGahan

CBS's Survivor series has had a very successful run in the newly spawned reality show market. The show has gone to various remote areas of the world where 16 perfect strangers are left to fend for themselves for 39 days, and in the process they try to outwit, outplay and outlast their teammates. The winner, or "sole survivor," walks away with a prize of $1 million, but everyone walks away with amazing stories.

How did you get the idea to be part of a reality show, and not just any reality show, but the mother of all reality shows, Survivor?

From the physical challenges to the constant mental strain, the Survivor concept is fantastic in every aspect. I watched the first season while on co-op (the extended internship program that many of the employees go through before becoming full time) with JPL and was immediately hooked.

That summer on a climbing trip in Joshua Tree, some friends and I shot my video for the Survivor 2 audition. With school in full force I didn't watch the show until I was called by CBS last September to fill a slot on the Amazon season. It was more a matter of luck and fortunate timing that landed me on "the mother of all reality shows."

How long did you spend in the Amazon?

The show is filmed for 39 days. As the first member of the jury, or the ninth slot, I spent a total of 24 days surviving the jungle and my fellow contestants. We didn't waste much time outside of the show. In order to maintain the anonymity of each contestant before the cameras start rolling, we quickly transitioned from traveling into the game. Similarly, there was no need for us to be in Brazil any longer than the show lasted; we left the day after the final tribal council. Dreams of a Double-Double and chocolate shake produced no complaints.

Was it really as primitive and dangerous as we are led to believe? Were there really alligators and piranha everywhere?

The Amazon is a harsh habitat. We ate piranha more than any other fish. Jaguar sightings forced us to keep a nightly fire watch. Infections occurred extremely easily due to the moist and hot conditions … I would have to say leaving 20-inch knives around inexperienced, urban-raised folk was scarily entertaining at times and probably more dangerous than any of the wildlife.

What was the hardest part about living in the jungle for a month?

For me, the social dynamics were the most difficult part of the show. Certainly the physical discomforts taxed the body and mind, but the constant stress of not knowing who to trust, who was hiding information from you, dealing with personality conflicts that arose due to short tempers, and intimate living interactions, were always a burden. To awaken with a smile after sleeping on bumpy logs with bugs crawling in your mouth, ears and eyes all night is a huge challenge.

Did you make any long-lasting friendships with any of your co-survivors?

Very much so. After sharing such an amazing experience, it would be impossible not to feel some greater connection. For the most part, I think that everybody realized what happened in the game wasn't necessarily indicative to their friendships outside of the Amazon. You can quickly forget how annoyingly bad somebody smells or snores once a shower and bed are in the forecast.

What was your best day?

Day 10. From catching a substantial fish that morning to coming from behind to win the Coke challenge, everything seemed to come together that day. Socially, we had a pecking order established that would keep the core group intact for at least two more tribal councils. Plus, we had a functional refrigerator in the middle of a jungle to keep beverages chilled. Certainly nothing better than a cold one on a malnourished hot day.

What was your worst day?

Day 9. For the first 13 days the teams were split up by gender. The dudes had lost four out of five challenges. Morale was low and the realization that we were being embarrassed on national television was running tensions thick. We had not caught any significant food and we hadn't fully adapted to our environment. Around this time, Roger decided to sleep without pants, which made the mornings that much more painful.

What was the funniest thing that happened?

There were plenty of unseen funny moments. Some highlights include:

- Daniel almost lighting Tribal Council on fire after spilling his torch all over the entrance.
- Any of the many tumbles and antics the camera/sound/producer folk took while attempting to get the best shot.
- Endless nights of haikus and limericks about the female tribe with Alex and Rob.

Continued on page 4

Being Dave Johnson

Age: 40
Hometown: Arcadia
Luxury Items: Papaya and spoon
Music: Reggae
Marital Status: Single but attached
Popularity Rating: 100%

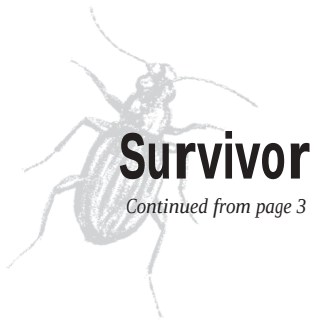
Some days it's not easy to be Dave Johnson. David L. Johnson, that is.

This Dave Johnson, or DJ, as he is known among his co-workers, works in JPL's Shipping and Receiving Section 2726. "I don't need to go to the Amazon," he says. "I got my own jungle right here."

Seems folks are calling him to congratulate him on his Survivor experience. Even the editor of NASA Watch called. DJ takes the confusion in stride. "I just go with it for a couple of minutes, and then I tell them that I am not that Dave Johnson."

To complicate matters, this is not DJ's first brush with confusion. In 1992 Dave Johnson won the bronze medal in the decathlon at the Barcelona Olympic Games. "My phone was ringing off the hook," DJ says. "All kinds of folks were calling me to give me best wishes and stuff. I guess he trained close to where I was living at the time.

"I would like to know if a Dave Johnson has won the lottery lately," he adds with a hearty laugh. "I'd like to get in on that."



Survivor

Continued from page 3

How did you get to be billed as the "Rocket Scientist?"

I had originally listed my profession as an engineer working for the Jet Propulsion Laboratory, NASA. When interviewing, I was constantly asked if I was a rocket scientist since I worked for NASA in a technical field. I figured that a "rocket scientist" by definition was a vague enough term that I could please the CBS producers and get away with it. Plus, it made a far better selling point for me as an individual to get on the show.

Do you think you broke through certain stereotypes of "Rocket Scientist" by being on the show?

I had three goals going into the show. I wanted to give it my best, have fun, and be myself. For the most part, I think I fulfilled all those criteria. If in that process I "broke through stereotypes," I hope I portrayed those in a positive light.

How are you dealing with your newfound celebrity status, both in your personal life and at work?

I don't consider myself a celebrity. I think I was lucky to be at the right place at the right time and was fortunate to make the most out of that opportunity. There is a bit of face recognition, but not enough that I feel my personal life has been invaded.

My first priority after the show has always been to JPL. I make large efforts to keep show stuff outside of the work environment. I would much rather be known at the Lab for technical expertise than as a reality television contestant.

Have you gotten any flack from your present co-workers about doing something like this?

Much of the enjoyment has been through sharing the experience with friends and coworkers. If embarrassing moments and mistakes help bring people together, I seem to have provided cause for much celebration. I can't complain too much; I am sure I would be tossing out humorous "flack" if one of my colleagues found themselves in a similar situation.

What did you learn from the experience?

Two things. One, don't hold hands with other females on national television when you have a girlfriend back home. They get mad regardless of motive. Two, brush and floss your teeth regularly. Bad things happen if, hypothetically speaking of course, you neglect or are forced into improper dental care. If you are really crazy, mouthwash every now and then is a good idea.

What's next for you?

I have a 10 a.m. meeting I need to attend.

Passings

CLINTON GENE LOWELL, 73, a retired quality control engineer, died May 28.

Lowell worked at JPL for five years as a contractor before becoming an employee in 1980. He retired in 1995.

Lowell is survived by his wife, Barbara, son Rod, daughter Jennifer and four grandchildren. He was buried at Oakdale Cemetery in Glendora.

PHIL NEUHAUSER, 73, a retired staff specialist in the former Public Affairs Office, died July 23.

Phil Neuhsuser

Neuhauser joined JPL in 1962 and later served as supervisor of the Conference and Audiovisual Facilities Group; supervisor of the Audiovisual Communications Office in Public Affairs; and manager of the Audiovisual and Education Office.

Neuhauser retired in 1995. From 1999 to 2001, he served as president of the Associated Retirees of Caltech/JPL.

He is survived by his wife, Mary, and three adult children. Memorial services are scheduled for Sunday, Aug. 3, at 4 p.m at San Fernando Mortuary, 1101 N. Maclay, San Fernando.

JPL'S ONLINE NEWS SOURCE

Classified ads will be available the day before Universe is published at
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Notice to Advertisers

Advertising is available for JPL and Caltech employees, contractors and retirees and their families. No more than two ads of up to 60 words each will be published for each advertiser. Items may be combined within one submission. Ads must be submitted via e-mail to universe@jpl.nasa.gov *and are due at 2 p.m. on the Monday after publication for the following issue.*

All housing and vehicle advertisements require that the qualifying person(s) placing the ad be listed as an owner on the ownership documents.

Classifieds

For Sale

AIR CONDITIONER, room unit, Quasar, 11000 BTU, 2.5 yrs. old, $100; WASHER & DRYER, Maytag, gd. cond., $150/both. 626/449-9885.

BEDS: king size with frame, box and pillow-top mattress, <1 yr. old, nearly unused, $200/obo; New England antique spool bed frame, includes head & foot boards, sides and slats, $200/obo. 952-8163.

CAMERA, Nikon Coolpix 5700, 5.0 megapixel, 8x optical/4x digital zoom, like new, $850 + free MBE-5700 battery pack. 714/952-3169 or kljourney@yahoo.com, Ken.

COMPUTER, Compaq desktop with 15" monitor, Intel 400 MHz, 128 MB RAM, new 56K modem, complete set for $325. 951-4990, Nik.

COMPUTER DESK, lots of storage space and place for printer / CPU, $60. 243-8255.

COMPUTER POWER CONTROL CENTER, 5 power switches + 1 master switch, 5 surge-protected outlets + 2 modem/fax/phone jacks, new, $20; ORGAN, Yamaha 415 electronic, 13 pedals, 3 keyboards, 144 rhythm patterns, $2,000. 790-3899.

DARTBOARD, w/ darts, good condition, $20. 626/303-0534.

DIAMOND, 1.07 carat, G color, VS1 clarity, 61 depth, 61 table, GIA certification, JPL employee, $6,390. 626/744-9052.

DINING ROOM SET, table, leaf and 6 upholstered chairs, $125. 626/447-6423.

DINING SET, slate blue, 2 lg. oval tablecloths, 18 placemats, 18 napkins w/rings, good cond., $50/all; SHOVELS, $2/ea. 626/357-8210.

DINNER JACKET, men's formal, sz. 40 long, burgundy, for cruises or any formal occasion, like new, $100 value, sell $25/obo. 626/793-1895, Albert.

FURNITURE: sectional, high back with 2 reclining seats, excellent condition, was $1,500, now $500; rocker chairs, was $400/ea., now $100/ea. 626/850-4378.

FURNITURE & MISC. ITEMS: black leather chair, $150 for pair; stainless steel tubular leather chair, $150 for pair; loveseat, $60; entertainment center, $75; 39" octagonal glass cocktail table, $100; Maytag washer (a9800) and gas dryer (dg 9800), $600; Echo pb1000 blower, $100; McCulloch 16" electric chainsaw, $40; 60-gal. acrylic aquarium w/stand, $180; fertilizer spreader, $15; Sanus speaker stands, $80/pair. 246-2319.

HOME GYM, Body-Solid EXM-1500S, see at www.bodysolid.com, $350. 957-5382.

KITCHEN ITEMS: glazed, porcelain mixing bowls, 8 1/2" green $8; 10 1/2" yellow $12; long, embossed silver-plated compote tray, 11 x 4 x 1," exc. cond., $10; covered, porcelain vegetable dish w/handles, $9; lg., carved hardwood pod for hors d'oeuvres, fruits, etc., 16 x 5 x 1 1/2", $10; Farberware, stainless steel, deep mixing bowl w/plastic cover, 7 1/2" diameter, $6. 626/793-1895, Albert.

LIGHT FIXTURES, fluorescent, 2' x 4', drop-in, tubes not included, $15/ea. 626/794-2237.

LOFT BED with desk, bookshelves, and mattress, Ikea, like-new condition, over $700 new, matching dresser also available, best offer. 714/524-5367.

MERGING HOUSEHOLDS, Super capacity Maytag washer/gas dryer, 1.5 yrs old, like new, $700; Sealy mattress set: CA King, firm, <1 yr old, excellent condition, $1,400 new, sell $700; 5-yr.-old version of same CA King mattresses, $300. 626/794-5924.

MOVING SALE: Jogging stroller, $50; infant car seat and stroller, Graco comb., 3 yrs. old, $75; infant bathtub, $5; bouncy chair w/music, $10; pair spkr, stands, wooden, 18", $20. 626/795-5126, Michelle, leave msg.

MOVING SALE: TV, 61" Sony XBR exc. cond., $1.75K; upright piano, Starr 1940sm, $200; sleeper sofa (queen, 4 yrs. old, orig. $1,400), $300; washer/dryer, $325, china, antique Noritake, $500; dining table/chairs, antique mahogany, $475; bedrm set, solid walnut, incl. armoir, nightstands, vanity/drawers, mirror, $500; desk, steel frame, $35; clock, Italian antique repro, $200; art work. 790-8990.

MOVING SALE: office desks, 2, $50/each; 6-foot bookshelves, 2, $25 each; office chairs, 4, $10/each; tables, 6-foot, heavy duty folding, 4, $15/each; folding dinnette table, 42-inch round, with 4 chairs, $50; dining table, 6-foot (with extension) oak, claw-foot, with 6 chairs, $200; coffee table, oak & glass, + 2 side tables + hall table, $100. 626/963-7612.

MOVING SALE: stereo cabinet, 4-foot oak & glass, slight damage, $20; office copier, Mita dc2055, heavy, $50; electric concrete mixer, full sack, unused, $100; poly lawn roller, large water fillable, unused, $50; approx 34 sheets 4 x 8 siding, mostly perfect, $250. 626/963-7612.

MOVING SALE: nearly-new furniture in very good condition; all prices are obo; TV/stereo cabinet, large teak, $850; bookcases, 2 Bonde style from Ikea, cherry color, 14 x 86" & 28 x 86", $275; end tables, 2 Indonesian teak with iron details, $130; tables, small bedside, wood with drawer & shelf, $225. 323/664-2672.

POOL, 4 ft. x 10 ft. x 15 ft., oval above-ground, in the box, never used, includes filter, ladder, skimmer, test kit and more, $850. 269-2672.

POOL TABLE, Delta Billiards, w/ accessories, track lighting and corner unit/cue rack, $900. 626/303-0534.

PORT REPLICATOR for IBM Thinkpad, works with T20, T21, A20, A21, or X, R series, like new, $85; CARD SHUFFLER, Johnson, collectible, all-metal construction with the exception of the friction wheels which drive the cards and the carved-wood dowel handles; stands ~6" handle-high, and ~9" by 6", flanges and handle inclusive, $35; DIET TAPES, Jenny Craig, set of 14, $50. 790-3899.

STEREO EQUIPMENT, Bang & Olufsen amp/tuner/CD/cassette/2spkrs, $450; 2 pair JBL spkrs, $85/pair; cabinet $45, Phillips TV 27" with stand, $100; several more spkrs, several antique sets, various high-end components. 790-8990.

TABLE, glass top, 1/2" thick x 8' x 4', perfect for large family dining, $200. 731-0470.

WASHER, automatic, Whirlpool LA8800XT, 3cf, direct drive, 9 wash cycles, 5 temp. combs., "infinite" H2O level selections, 3 wash agitation speeds, 2 spin speeds, extra rinse option, good cond., $100 obo. 323/208-2329.

WASHER AND DRYER, electric, good condition, $125/both. 626/445-1013.

Vehicles / Accessories

'93 ACURA Integra GS hatchback, good cond., 97K mi. red, 5 sp., a/c, moonroof, new tires, belts, brakes, H20 pump, orig. owner, $4,200. 626/794-9358.

'95 CADILLAC Eldorado coupe, 2 dr., loaded, blk, 61K, leather interior, sunroof, exc. condition, original owner, $12,000/obo. 790-0364.

'98 FORD Crown Victoria LX, 4.6L V8, 4 door, white/beige, leather, CD, keyless entry (remote and keypad), cruise, power everything, 100K, split front seats, good cond., $11,500. 822-6465, Ryan or code3media@crownvic.net.

'89 FORD Probe, GT Hatchback 2 dr., 4-cyl. 2.2L turbo, 5 spd. manual, front wheel drive, 150,000 miles, a/c needs Freon, power steering/brakes/windows/door locks/seat/mirrors, tilt wheel, cruise control, am/fm/cassette, suspension adjustment (sport/regular/soft), dashboard computer display mpg/temp/tripset, etc. good gas mileage, great condition, originally $3,000, now $2,500. 626/395-9569 or johnboy2@prodigy.net.

'74 FORD van, 4 x 4, E300 Pathfinder SWB rebuilt engine/transmission 30K miles ago, all 4x4, works well, $2,000. 952-6181.

'99 HARLEY-DAVIDSON Fatboy by Ultra, custom paint (blk w/ drk blue flames), 113 CI, S&S engine, low mileage, extra chrome, excellent condition, fast, $14,800. 909/471-0441.

'93 HONDA Civic DX, 4 dr., 5 spd., 1 owner, vg cond., maint. records, low mileage (75K), a/c, am/fm/cass., power steering, airbag, new tires, blue, $4,000. 626/574-5733.

'88 HONDA Accord LX, 5 spd, 4 dr, 4 cyl, a/c, pwr. windows/locks, Blaupunkt tape, beige, 213K mi., $1,700/obo. 626/795-5126, Michelle/Tyson, leave msg.

HONDA Trail 70 motorcycle, kept in storage, may need work, $250. 626/798-2012.

'94 KAWASAKI Jet Ski, 750 SX, low usage, exc. cond., includes hand cart/stand and towable cover, $1,000/obo. 626/287-4449.

'95 NISSAN Pathfinder XE, 4 x 4, V6, loaded, exc., 4 new tires, LoJack, tow, full power, 135K miles, $5,900. 909/596-9007.

'93 NISSAN Sentra, silver/gray, a/c, cc, 4 cyl, auto with o/d, 118K mi., $3,000. 626/359-6570.

'89 NISSAN 240SX hatchback, manual, burgundy, pinstriped, runs like a dream, great shape for its year and model, typical wear on driver's seatback, original owner, garaged, regularly serviced, all paperwork, exc. air, tires, brakes, clutch, and new Sony removable faceplate AM/FM tape, sports car look and feel at a bargain price, selling reluctantly for medical reasons only, 70K, $2,500/firm. 626/405-2323 or ragdoll9@pacbell.net.

'98 TOYOTA Corolla LE, beige, automatic transmission, 74K mi., power steering/brakes/door locks/windows, a/c, rear defroster, cruise control, stereo AM/FM/cassette, tinted glass, air bags, exc. cond., factory warranty, $9,300. 714/843-5211.

'93 TOYOTA 4Runner SR5, V6, 2 wheel drive, automatic, power windows, sun roof, roof rack, running boards, towing pkg, new brakes, 115K mi., very good cond., $5,825/obo. 626/449-9885.

'98 VW Passat GLS wagon, sporty 1.8L turbo engine, 73K miles, excellent condition, light blue color with black leather seats, automatic transmission with tip-tronic shifting option (like manual), moon roof, power windows, good mpg, original owner, $11,000. 502-1282.

'86 YAMAHA Route 66 250cc motorcycle, 5K mi., needs minor repairs, new parts included, $1,200/obo. 626/795-5126, Michelle/Tyson, leave msg.

Wanted

GUEST HOUSE or APT., retired LCHS counselor and soon-to-be-retired 40-year JPLer, until early January 2004. 790-6313.

LONGBOARDS, 8' to 9' range, fiberglass, used. 790-2272.

ROOMATE(S) to share apt. or house, male preferred, non-smoking. 281-2494, Alex.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

VOLLEYBALL PLAYERS, coed, no beginners please, Tuesday nights 8 to 10 at Eagle Rock High School, $4/night. 956-1744, Barbara.

Free

CAT, 8 years old, Balinese, male, to good home, very sweet, ok with other cats and children. 244-8729.

CLEAN FILL DIRT, 10 cu yds avail., haul as little or as much as you like, near Los Robles/Jackson, Pasadena. 626/791-3103.

VERTICAL BLINDS for vinyl patio door to fit 94" wide x 84" high opening, includes all mounting hardware. 246-2319.

Lost & Found

Found: Gray and white hat in Bldg. 111 week of July 14, pickup in Bldg. 111-125.

For Rent

ALTADENA, 3 bd, 2 ba view home, minutes from JPL, borders Angeles Nat'l Forest & trails; furnished, includes refrig, stove, extra freezer, washer/drier; spacious kitchen/living/dining areas, fireplace, 2-car garage, courtyard, shaded patio, fruit trees, English garden; quiet neighborhood, avail. 9/15; 1-year lease required, $2,200 + util. 626/798-3235, Lori.

ARCADIA apt., 2 bd. + den, 1 ba., garage, remodeled, refrigerator/washer/dryer in unit, a/c, dishwasher, spacious, walking distance to shops, exc. neighborhood, no pets, water/gardener/trash included, $1,350. 626/576-7333.

E. ALTADENA home for lease, quiet & lovely area near Farnsworth Park, spacious 3 bd., 2 ba., 2 fireplaces, oversized den, kitchen & baths have Bolivar slate floors & tile, kitchen opens to den for great entertaining, cozy backyard, $2,500. 323/684-2508, Oren.

MONTROSE townhome, 2 large bd., 2 full ba., 2-car garage, gated community, top-rated school, near JPL campus, $1,500. 510-353-0900, x222.

N. SAN GABRIEL, 3 bd. + 1.5 ba., house, 2-car garage, patio, exc. neighborhood, no pets, $1,700 includes gardener service, on approved credit. 626/458-3852.

PASADENA, upstairs apt., 1 bd., utilities incl., $800 + $500 deposit. 626/798-0069.

PASADENA, townhome-style apartments, 2 bd., 1.5 ba., patio, dishwasher, central a/c, new carpet & floors, laundry, parking, furn. $1,375, unfurn. $1,295. 626/429-3677.

PASADENA, spacious 2-story condo, 3 bd, 2.5 ba., prestigious community, beaut. inter., bright ktch., prof. landscape, ctrl. air & heat, close to shop., cozy LR w/FP, end unit, frml. DR, hdwd. flrs., immac. cond., close to schls. $1,750. 626/396-9024.

PASADENA house in a new, quiet and community with area, pool, and Jacuzzi; two-story, spacious 3 bd., 2.5 ba. with large landscaped backyard, fireplace, balcony, central air/heat, refrigerator, washer/dryer, and two-car garage; few minutes from JPL or Caltech; near schools, shopping and Hastings Ranch theaters; $2,300. 626/797-0298, Sami.

SAN MARINO house, 3 bd., 2 ba., 2-car garage with automatic opener, newly painted, remodeled kitchen, dishwasher, a/c, laundry hookups, fireplace, spacious family rm. overlooking yard, no pets, exc. neighborhood and school district, $3,000. 626/576-7333.

SUNLAND, fully furnished room in condo, share kitchen/bath/laundry, garage parking, a/c, fireplace, pool, Jacuzzi, tennis court; 10 miles to JPL, female preferred, non-smoking; $500, includes utilities; $400 security deposit; references. 352-3112.

TUJUNGA, Craftsman style house, 1 bd., 1 ba., quiet family neighborhood, pvt. driveway, front/back yard, suitable for 1-2 dogs, W&D hook-up, new roof, 15 min/JPL, 210 fwy & shopping close by, $750 + sec. 213/810-3430 or 951-8552, Felicia, 9 a.m.-10 p.m.

TUJUNGA, 2 bd., 1 ba., 2-car garage, quiet st., 15 min/JPL, 210 fwy & shopping closeby, $1,200 + sec. 249-8528.

Vacation Rentals

BALBOA ISLAND, cute beach apt., fully furnished 2 bd., 1 ba., patio, washer/dryer, parking, sleeps 5, steps to bay, $1,500/week. 626/429-3677.

BIG BEAR LAKEFRONT, luxury town home, 2 decks, tennis, pool/spa, beautiful master bd. suite, sleeps 6. 949/786-6548.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps 4, laundry fac., Low Season rate $105/nite/2, High Season rate $120/nite/2, $15/nite/add'l person. 949/348-8047, or jackandrandy@cox.net.

LAS VEGAS, new penthouse condo, 2 bd., 2 ba. w/jetted tub, avail. 9/10-9/17/03, 2-night minimum. 626/334-1408.

MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, sleeps 6-8, fully equipped kitchen incl. microwave, D/W, cable TV, VCR, phone, balcony w/view to mtns., Jacuzzi, sauna, streams, fishponds, close to Mammoth Creek, JPL discount. 626/798-9222, 626/794-0455 or valerie@gps.caltech.edu.

OCEANSIDE condo, fully furn., 2 bd., 2 ba., fireplace, full kitch., quiet, relaxing, beautiful beachside setting; BBQ, pool, spa, game rm., great ocean view; easy walk to pier and restaurants, sleeps 8; avail. weekly or monthly. 909/981-7492, Darlene or dfhauge@yahoo.com.

OCEANSIDE, on the sand, charming 1 bd. condo, panoramic view, walk to pier & harbor, pool/spa, game rm., sleeps 4. 949/786-6548.

2001 PACE ARROW 34-foot RV, queen bed, sofa bed and dinette bed; monthly rentals only, $4,000 in advance + $1,000 security deposit; you pay insurance and gas; JPL employees only; no smoking or pets. tahoemike@earthlink.net, 530/525-7334.

RIO DE JANEIRO, lovely apartment (condo) overlooking Copacabana beach, sleeps up to 4, near major hotels and attractions, $80/night. 626/304-0688 or 626/303-1616.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.

Universe

Jet Propulsion Laboratory

Inside

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SIRTF launch Aug. 23

THE SPACE INFRARED TELESCOPE Facility (SIRTF), the fourth and final element in NASA's family of orbiting "Great Observatories," is undergoing final preparations for its long-anticipated launch, scheduled for Aug. 23 from Cape Canaveral Air Force Station, Florida.

The mission, managed by JPL, will launch at 1:37 a.m. Eastern time, which is 10:37 p.m. Pacific time on Aug. 22.

Deputy Project Manager Bill Irace said recent checkouts have shown the spacecraft and Delta II Heavy launch vehicle to be in good shape. Recently activity includes a successful operations launch readiness test on Aug. 5, followed the next day by the removal of the telescope's dust cover.

The second stage of SIRTF's Delta II rocket is lowered into position atop the first stage.

Batteries have been charged, an electrical checkout was completed, and the spacecraft has been installed on the Delta's second stage. The next scheduled milestone, Irace said, was a flight readiness review scheduled for Aug. 15.

The launch period extends to Sept. 17.

"It's exciting; we're all past ready," Irace said. "The team is really chafing at the bit to get this spacecraft into orbit."

During its 2.5-year mission, SIRTF will obtain images and spectra by detecting the infrared energy, or heat, radiated by objects in space between wavelengths of 3 and 180 microns (1 micron is one-millionth of a meter). Most of this infrared radiation is blocked by the Earth's atmosphere and cannot be observed from the ground.

Consisting of a 0.85-meter telescope and three cryogenically-cooled science instruments, SIRTF will be the largest infrared telescope ever launched into space. Its highly sensitive instruments will give us a unique view of the universe and allow us to peer into regions of space that are hidden from optical telescopes. Infrared light allows us to peer into regions of star formation, the centers of galaxies, and into newly forming planetary systems.

The other missions in NASA's Great Observatories Program are the Hubble Space Telescope, Compton Gamma-Ray Observatory and the Chandra X-Ray Observatory. SIRTF is also a part of NASA's Astronomical Search for Origins Program, designed to provide information that will help us understand our cosmic roots, and how galaxies, stars and planets develop and form.

All objects in the universe with temperatures above absolute zero (-460 F) emit some infrared radiation, or heat. Infrared wavelengths lie beyond the red portion of the visible spectrum and are invisible to the human eye. Most infrared light emitted by celestial objects is absorbed by Earth's atmosphere. Scientists rely on orbiting telescopes such as SIRTF to capture data on celestial objects and phenomena that are too dim, distant or cool to study using ground-based telescopes or by other astronomical techniques.

For more information about the mission, go to *http://sirtf.caltech.edu*.

Mars Scout mission selected

JPL will manage 'Phoenix' lander, set for 2007 launch

By Guy Webster

IN MAY 2008, THE PROGENY OF TWO PROMISING U.S. missions to Mars will deploy a lander to the water-ice-rich northern polar region, dig with a robotic arm into arctic terrain for clues on the history of water, and search for environments suitable for microbes.

NASA announced Aug. 4 that it has selected the University of Arizona "Phoenix" mission for launch in 2007 as what is hoped will be the first in a new line of smaller competed "Scout" missions in the agency's Mars Exploration Program.

JPL will manage the project and provide mission design. Barry Goldstein *(below),* currently on the Mars Exploration Rover Project, has been named the Phoenix project manager. Also, JPLers named to the science team are Diana Blaney, Eric de Jong, Michael Hecht and Leslie Tamppari.

The science instruments and operations will be a University of Arizona responsibility. Lockheed Martin Space Systems, Denver, will build and test the spacecraft. Canadian partners will provide the meteorological instrumentation, including an innovative laser-based sensor.

Phoenix has the scientific capability "to change our thinking about the origins of life on other worlds," said Dr. Peter H. Smith of the University of Arizona Lunar and Planetary Laboratory, who heads the Phoenix mission. "Even though the northern plains are thought to be too cold now for water to exist as a liquid, periodic variations in the Martian orbit allow a warmer climate to develop every 50,000 years. During these periods the ice can melt, dormant organisms could come back to life, (if there are indeed any), and evolution can proceed. Our mission will verify whether the northern plains are indeed a last viable habitat on Mars."

The lander for Phoenix was built and was being tested to fly as part of the 2001 Mars Surveyor Program, but the program was canceled after the Mars Polar Lander was lost upon landing near Mars' south pole in December 1999. Since then, the 2001 lander has been stored in a clean room at Lockheed Martin in Denver, managed by NASA's new Mars Exploration Program as a flight asset.

Renamed Phoenix, it will carry improved versions of panoramic cameras and a volatiles-analysis instrument from the ill-fated Mars Polar Lander, as well as experiments that had been built for the 2001 Mars Surveyor Program, including a JPL trench-digging robot arm and a chemistry-microscopy instrument. The science payload also includes a descent imager and a suite of meteorological instruments.

The mission's goals are to study the geologic history of water, the key to unlocking the story of past climate change; and to search for evidence of a habitable zone that may exist in the ice-soil boundary, the "biological paydirt."

The Phoenix robotic arm will scoop up Martian soil samples and deliver them for heating into tiny ovens of the volatiles-analysis instrument so team members can measure how much water vapor and carbon dioxide gas are given off, how much water ice the samples contain, and what minerals are present that may have formed during a wetter, warmer past climate. The instrument, called thermal evolved gas analyzer, will also measure any organic volatiles.

Using another instrument, researchers will examine soil particles as small as 16 microns across. They will measure electrical and thermal conductivity of soil particles using a probe on the robotic arm scoop. One of the most interesting experiments is the wet chemistry laboratory, Smith said.

"We plan to scoop up some soil, put it in a cell, add water, shake it up, and measure the impurities dissolved in the water that have leached out from the soil. This is important, because if the soil ever gets wet, we'll know if microbes could survive," Smith said. "We'll know if the wet soil is super acidic or alkaline and salty, or full of oxidants that can destroy life. We'll test the environment that microbes might have had to live and grow in."

Mars rovers' instruments assessed

The first in-flight checkouts of the science instruments and engineering cameras on JPL's twin Spirit and Opportunity spacecraft on their way to Mars have provided an assessment of the instruments' condition after the stressful vibrations of launch.

The instrument tests run by the Mars Exploration Rover flight team at JPL finished with performance data received Aug. 5 from two of the spectrometers on Opportunity.

Each rover's suite of science instruments includes a stereo panoramic camera pair, a microscope camera and three spectrometers. The tests also evaluated performance of each spacecraft's engineering cameras, which are a stereo navigation camera pair, stereo hazard-avoidance camera pairs on the front and back of the rover, and a downward-pointing descent camera on the lander to aid a system for reducing horizontal motion just before impact.

All 10 cameras on each spacecraft—three science cameras and seven engineering cameras on each—performed well. One of Spirit's three spectrometers returned data that did not fit the expected pattern. Spirit's other two spectrometers and all three on Opportunity worked properly.

"All the engineering cameras are healthy," said JPL imaging scientist Dr. Justin Maki. "Even when the cameras are in the dark, the images give characteristic signatures that let us know whether the electronics are working correctly."

The science cameras on each rover all performed flawlessly. A spectrometer on each rover for identifying minerals from a distance, called the miniature thermal emission spectrometer, also worked perfectly on each rover.

Two other spectrometers—an alpha particle X-ray spectrometer and a Mössbauer spectrometer—are mounted on an extendable arm for close-up examination of the composition of rocks and soil. Both instruments on Opportunity, as well as Spirit's alpha particle X-ray spectrometer, worked properly. The Mössbauer spectrometer on Spirit is the one whose test data did not fit the pattern expected from normal operation.

"The Mössbauer results we received from Opportunity are helping us interpret the data that we've been analyzing from Spirit," said Dr. Steve Squyres of Cornell University, Ithaca, N.Y., principal investigator for the suite of science tools on each rover.

News Briefs

Dr. Gerard Holzmann

Holzmann wins software award

DR. GERARD HOLZMANN, principal computer scientist in JPL's new Laboratory for Reliable Software, has won a Thomas Alva Edison patent award in the information technology category.

The award, given by the Research and Development Council of New Jersey, will be presented Nov. 6 at the council's annual awards dinner in New Jersey. Holzmann shares the award, which was for work performed when he was with Lucent Technologies' Bell Labs in New Jersey, with two co-inventors.

Holzmann's invention, called "Method and Apparatus for Testing Event Driven Software," has been used to test the flight software for JPL's Mars Pathfinder and Deep Space 1 missions and will be used on Deep Impact, a spacecraft planned for launch in 2004 that will visit comet Tempel 1 in an effort to understand what is inside a comet.

"It's a wonderful honor to receive this award, and a true privilege to be able to apply these techniques in JPL missions," said Holzmann.

Software team gets NASA honors

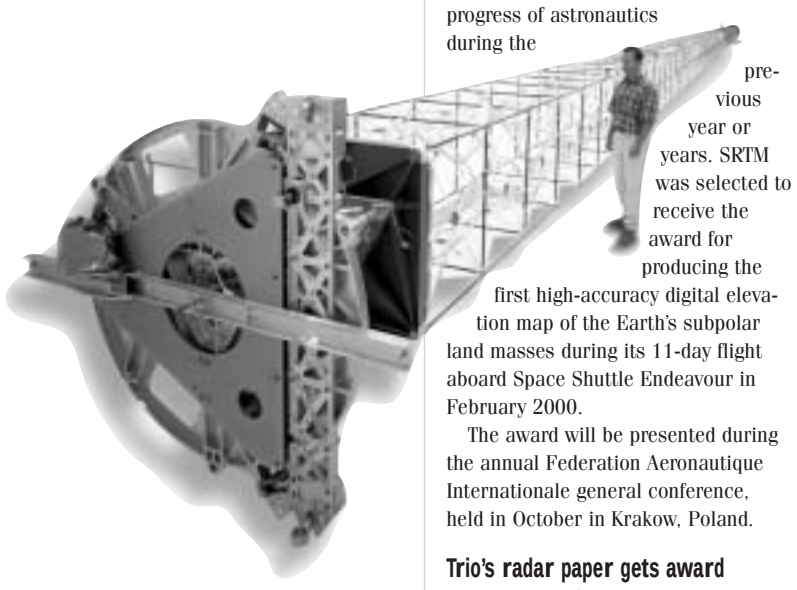
JPL received an award as the best software research organization in NASA at the agency's Code Q Software Assurance Symposium held in Morgantown, WV, July 30–Aug. 1.

The work of DR. ROBYN LUTZ and DR. DAVID GILLIAM was cited at the symposium, which was attended by BRYAN O'CONNOR, NASA Associate Administrator for Safety and Mission Assurance, and software researchers and practitioners from across NASA. DR. MARTIN FEATHER received an award for best research of the year. JOHN POWELL was cited as a major contributor to Gilliam's work and CARMEN MIKULSKI received kudos as a major contributor to Lutz' work.

SRTM receives international award

JPL's Shuttle Radar Topography Mission (SRTM) has been awarded the Honorary Group Diploma for Astronautics by the Federation Aeronautique Internationale.

The organization said the diploma is awarded to groups of people that have contributed significantly to the progress of astronautics during the previous year or years. SRTM was selected to receive the award for producing the first high-accuracy digital elevation map of the Earth's subpolar land masses during its 11-day flight aboard Space Shuttle Endeavour in February 2000.



The award will be presented during the annual Federation Aeronautique Internationale general conference, held in October in Krakow, Poland.

Trio's radar paper gets award

The Institute of Electrical and Electronics Engineers' Geoscience and Remote Sensing Society has awarded its 2003 Transactions Prize paper award to SIMON YUEH, WILLIAM WILSON and STEVE DINARDO for their April 2002 paper "Polarimetric Radar Remote Sensing of Ocean Surface Wind."

The paper described the development of the polarimetric scatterometer radar system (PolScat) and a set of aircraft flight experiments to demonstrate the polarimetric radar measurement concept for ocean winds.

The $2,000 prize and certificates were awarded at the July 24 awards banquet at the IEEE International Geoscience and Remote Sensing Symposium in Toulouse, France.

Barber's liquid propulsion paper wins

TODD BARBER of Research Element 3533 won an award from the American Institute of Aeronautics for a paper on liquid propulsion he submitted to a recent conference.

The paper, "Initial Cassini Propulsion System In-Flight Characterization," co-authored by RICHARD COWLEY, was selected for honors over 160 other papers submitted in the liquid propulsion category. The paper provided an overview of how Cassini's propulsion system has performed during its first four years of flight.

In addition to Cassini, Barber has worked in propulsion mission operations for the Mars Exploration Rovers project and other missions.

Halpern honored by IAA

DAVID HALPERN, senior research scientist in Section 324 and currently on assignment at the White House Office of Science and Technology in Washington, D.C., has been elected a life member of the International Academy of Astronautics for sustained outstanding contributions in basic science related to astronautics, as well as to international cooperation in aerospace sciences.

Halpern is also a Fellow of the American Association for the Advancement of Science, American Geophysical Union and the American Meteorological Society, and an honorary Fellow of the California Academy of Sciences.

Asteroids dedicated to Columbia crew

The final crew of the Space Shuttle Columbia was memorialized in the cosmos as seven asteroids orbiting the sun between Mars and Jupiter were named in their honor on Aug. 6.

The Columbia crew—commander RICK HUSBAND; pilot WILLIAM MCCOOL; mission specialists MICHAEL ANDERSON, KALPANA CHAWLA, DAVID BROWN and LAUREL CLARK; and Israeli payload specialist ILAN RAMON, now have celestial memorials, easily found from Earth.

The names, proposed by JPL, were recently approved by the International Astronomical Union.

The seven asteroids were discovered at the Palomar Observatory near San Diego on the nights of July 19-21, 2001, by former JPL astronomer ELEANOR HELIN, who retired in July 2002. The seven asteroids range in diameter from five to seven kilometers (3.1 to 4.3 miles). The Palomar Observatory is owned and operated by Caltech.

"Asteroids have been around for billions of years and will remain for billions more," said DR. RAYMOND BAMBERY, principal investigator of JPL's Near-Earth Asteroid Tracking System. "I like to think that in the years, decades and millennia ahead people will look to the heavens, locate these seven celestial sentinels and remember the sacrifice made by the Columbia astronauts."

Galileo team event Sept. 21

The Public Services Office is seeking members of the Galileo project for a special JPL event Sept. 21.

Galileo executed 34 orbits of Jupiter following its Dec. 7, 1995, arrival at the planet, in addition to dozens of close examinations of Jupiter's four largest moons. At the end of its 35th orbit, on Sept. 21, it will do a mission-ending dive into Jupiter.

Public Services will host an end-of-mission tribute that will include guest speakers and a general gathering for guests. Galileo veterans are asked to e-mail *pso@jpl.nasa.gov* and include their name, address and telephone number. Those without access to e-mail can call Public Services at (818) 354-0112.

Temporary Lab access for kids

Have you ever left work only to realize that you've left something important back in your office? You've already picked up your child, who is now strapped into the car seat next to you. What do you do?

Well, you don't need to leave your child at the guard gate while you run back into your office. A recent policy revision allows you temporary vehicle access onto Lab, while accompanied by a minor child. For further details, refer to JPL DocID43833, Section 2.1 on JPL Rules!

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Group—Meets the first Friday and third Thursday of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in the Wellness Place, Building 167-111.

Working Parents Support Group—Meets the third Thursday of the month at noon in Building 167-111. For more information, call the Employee Assistance Program at ext. 4-3680.

Friday, August 15

Summer Salsa and Tango Party—From 9 p.m. to midnight, Caltech's Avery Dining Hall will host Latin dance music, featuring salsa and Argentine tango (the two Ballroom Dance Club summer classes). All dance backgrounds are welcome. For beginners, there will be a mini-lesson starting at 8:30 p.m. Admission is free, and refreshments will be served.

Tues.–Wed., Aug. 19–20

Investment Advice—TIAA/CREF representatives will be available for one-on-one counseling. For an appointment, visit *www.tiaa-cref.org* or call (877) 209-3140, ext. 2614.

Wednesday, August 20

Investment Advice—Fidelity representatives will be available for one-on-one counseling. For an appointment, call (800) 642-7131.

Fidelity Investment Workshop—Fidelity vice president Roland Jacobson will present an advanced workshop from 2 to 4 p.m. in Building 180-101. Topics: economic and market overview, advanced asset allocation and historical mutual fund performance. Seating will be limited, so arrive early.

Thursday, August 21

TIAA/CREF Enrollment Meeting—This workshop, held at noon in T1720-137, is designed to assist employees newly eligible for the Caltech/JPL retirement plan with selection of investment options and completion of enrollment forms.

Thu.–Fri., August 21–22

Von Kármán Lecture Series—Mars Exploration Rovers Project Manager Peter Theisinger will discuss the twin robotic geologists at 7 p.m. Thursday in von Kármán Auditorium and Friday in Pasadena City College's Vosloh Forum, 1570 E. Colorado Blvd. Thursday's lecture will be webcast at *http://www. jpl.nasa.gov/events/lectures/aug03.html.*

Monday, August 25

MLK Quilt Deadline—Entries are due today for the quilting project for JPL's Martin Luther King Jr. 2004 celebration. Designs should illustrate King's spirit and the 2004 theme, "Personal Responsibility in a Diverse World: Share in the Experience of Pride and Equality." Submissions should be on a 6" x 6" sheet of white paper and sent to Laura White, mail stop 201-203. For more information, call her at ext. 3-5441.

Tuesday, August 26

JPL Hiking + Club—Venezuela's oldest national park will be highlighted at a noon slide show presented by guest speaker Tom Ryan, a field biologist, in Building 238-543.

Tues.–Thu., Aug. 26–28

CMMI course—JPL's Software Quality Improvement Project will offer a three-day course at the Embassy Suites Hotel in Arcadia that provides an introduction to the Capability Maturity Model Integrated. For more information, visit JPL's Education & Training site at *http://hr/et*.

Wednesday, August 27

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Debbie Llata at ext. 3-3690 for information.

Volunteer Professionals for Medical Advancement—Meeting at 10:30 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

Thursday, August 28

JPL Golf Club—Meeting at noon in Building 306-302.

JPL Stories—Jack Dawson of JPL's Media Relations Office will present "Two Spectacular Examples of High-Speed and Time Lapse Photography from JPL," at 4 p.m. in the Library, Building 111-104. One example he will show is the crashing of a commercial aircraft at Edwards Air Force Base using 100 high-speed film and video cameras, a 20-second event expanded to a screen time of 10 minutes.

Ion engine sets test record

The future is here for spacecraft propulsion and the trouble-free engine performance that every vehicle operator would like, achieved by an ion engine running for a record 30,352 hours at JPL.

The engine is a spare of the Deep Space 1 ion engine used during a successful technology demonstration mission that featured a bonus visit to comet Borrelly. It had a design life of 8,000 hours, but researchers kept it running for almost five years, from Oct. 5, 1998, to June 26, 2003, in a rare opportunity to fully observe its performance and wear at different power levels throughout the test. This information is vital to future missions that will use ion propulsion, as well as to current research efforts to develop improved ion thrusters.

While the engine had not yet reached the end of its life, the decision was made to terminate the test because near-term missions using ion propulsion needed analysis data that required inspection of the different engine components. In particular, the inspection of the thruster's discharge chamber, where xenon gas is ionized, is critical for mission designers of the upcoming Dawn mission. Dawn, part of NASA's Discovery Program, will be launched in 2006 to orbit Vesta and Ceres, two of the largest asteroids in the solar system.

"The chamber was in good condition, " said John Brophy, JPL's project element manager for the Dawn ion propulsion system. "Most of the components showed wear, but nothing that would have caused near-term failure."

IT's future in view

CSMISS conference gathers world's experts

The conference focused on bringing the technology leaders and the mission experts together, as well as bringing information technology to the forefront of space mission projects, including JPL's large role in developing and implementing such technology.

BY SUSAN BRAUNHEIM-KALOGERAKOS

More than 300 technologists from all over the world gathered last month to explore and discuss the key role information technology plays in space mission projects. The International Conference on Space Mission Challenges for Information Technology at the Pasadena Conference Center included keynote speakers, tutorials and panel discussions.

Sponsored by the JPL Center for Space Mission Information and Software Systems (CSMISS), the conference was co-chaired by Sven Grenander and Larry Bergman, with Richard Doyle and David J. Atkinson serving as technical program chairs.

The event was the first forum of its kind. It gathered system designers, engineers, scientists, practitioners and space explorers in an effort to recognize how critical information technology is to space mission success. The conference focused on bringing the technology leaders and the mission experts together, as well as bringing information technology to the forefront of space mission projects, including JPL's large role in developing and implementing such technology.

Visitors enjoy the exhibits at the CSMISS conference.

Software, computing, and information technology in general are playing more central roles on space missions these days. All indications are that this trend will continue.

"The role of space information technology has progressively grown in importance from the early days of space exploration," said Grenander, CSMISS deputy leader. "Today, it would be inconceivable to launch a mission without it."

The conference provided an opportunity for promoting technical interchange on all hardware and software aspects of information technology applications in space missions. It centered on current information technology practices and challenges as well as emerging information technologies with applicability for future space missions.

One of the organizers' goals was to foster a sense of community for space mission information technologists from every discipline, and to bring the space mission development experts and the information technology research communities together.

"The event served to bring together the technologists and their customers, the project folks, to get them to mutually understand the problems each face," said Grenander.

Another goal of the conference was to bring together in one forum cross-cutting themes in information technology that run through all aspects of a space mission lifecycle.

"A conference like this is a perfect place to address such issues and themes because they represent a synthesis of many processes and technologies," said Bergman, manager of the Space Mission Information Systems Technology Office. "You are best able to identify these cross-cutting themes when they are presented collectively."

Included among the attendees were aerospace, defense and other industry representatives from several countries including Japan, Canada, the Netherlands, Australia, South Africa, Denmark, Germany and Sweden.

Among the keynote speakers at the symposium was John Delaney of the University of Washington. He touched on similarities between the challenges for deep-sea exploration and deep-space exploration in his talk, "NEPTUNE: A Regional Network of Interactive Ocean Laboratories at the Scale of a Tectonic Plate: A New Paradigm in the Earth and Ocean Sciences."

"I was particularly struck by the similarities between the challenges for deep-sea exploration and deep-space exploration," said Doyle, CSMISS leader. "In both of these areas, information technologies are emerging as an important and very similar component of the solution on how to keep pushing back the frontier."

Other keynote speakers focused on the challenges and the possibilities of information technology. Greg Bollela from Sun Microsystems Lab, the "father" of the real-time Java specification, discussed difficulties of real-time computing in space and the capabilities of real-time Java. In another keynote address, JPL's Adrian Hooke discussed the Interplanetary Network, the space-based counterpart of the Internet as we know it.

Because one of the goals of the conference was to illustrate cross-cutting themes in the discipline, Grenander said he thought the keynote speakers were well selected to represent many fields in information technology. "The speakers presented a great opportunity for collaborations between people that ordinarily would not be in contact with each other," he said.

Panel discussion sessions focused on the future direction of space information technology and a variety of case studies. The tutorial programs ranged from practical topics to the newest cutting-edge technologies. Exhibits were provided from prominent companies like Sun, Lockheed Martin, SGI and Dynamic Systems.

However, the conference was not all work and no play.

To the delight of those from out of town, attendees enjoyed a fun-filled "night out" at Universal Studios Hollywood, took a stroll down CityWalk and watched a special showing of "The Space Shuttle 3D" at the IMAX Theater.

The guest speaker at the private dinner at Universal's Globe Theater that followed was Robert Picardo, who plays the doctor on the Star Trek Voyager series. His character is an emergency medical hologram.

"As his character is a product of artificial intelligence and virtual environments technologies, he was a perfect choice given the conference theme," Doyle said. "He gave us a very thoughtful and witty speech."

The event is being hailed a great success. It left participants and organizers alike satisfied.

Doyle said the attendees were strongly engaged with the theme of the conference, perhaps more so than at conferences that already have a fairly mature series of meetings behind them. "I believe the attendees left with a sense of momentum for future Space Mission Challenges IT conferences," he said. "They plan to be back."

Atkinson, deputy manager of the Information Technologies and Software Systems Division, agreed. "I was heartened by the fact that there is a very talented international community who not only recognize the challenges ahead, but want to work collaboratively to resolve them," he said.

Several of those in attendance have already expressed interest in the next conference, to be held in 2005. An international standing committee is also being established to help organize the future conferences.

Photos courtesy of Kathy Little and Larry Bergman

Passings

DAVE PRESS, 48, formerly with Section 661 (now 281), the Facilities Service Request area, died April 30 from complications of a brain tumor.

Press joined the Lab in 1992 in the Facilities Division Office/Computer Information Services (660). He left JPL in 1999.

Press is survived by his wife, Nipa.

Retirees

The following JPL employees retired in August:

Andre Caticchio, 38 years, Section 512; Roger Dick, 37 years, Section 366; James Miller, 36 years, Section 312; Edmond Momjian, 29 years, Section 107; Patricia McGuire, 26 years, Section 823; Charles Radics, 26 years; Paula Goodrich, 22 years, Section 361; Philip LaFond, 16 years, Section 217; Thomas Dea, 12 years, Section 349.

Letters

Thank you very much to my friends and coworkers who expressed their support following the death of my mother-in-law, and thanks, too, to JPL for the plant.

Alan Mazer

Classifieds

For Sale

AIR CONDITIONER, Sears Coldspot, very large window unit, 28,000 BTU/hr., $125/obo. 661/299-2490.

BABY FURNITURE, Little Folks, maple furniture set, matching crib, dresser/changing table, 3 drawer dresser and hutch, like new, $750/obo. 831-3998.

BED, antique, called "Trailing Vine," brass and iron, ca. 1885, made by Indiana Iron foundry, recently repainted and brass repolished, would make a terrific child's bed, $1,300/obo. 249-0453 betw. 5-9 or jkbonner@gte.net.

BICYCLE, recumbent, Sun EZ Sport limited, color red/silver, new in unopened box, see www.sunbicycles.com, $1,000/obo. 323/256-0215.

CABINETS, oak, 34" W x 78 H x 19 D, glass etched and beveled, $400/ea. 626/963-5484.

CAMPSITE, Big Sycamore Canyon, Pt. Mugu, near Oxnard, Wed., 8/27 - Sat. (noon) 8/30, 3 nights, $55. 956-1744.

CAMP MEMBERSHIP, Thousand Trails/NACO nationwide motor home, $1,500. 626/963-5484.

CAR-ROOF CARRIER SYSTEM, Yakima, for 2 bicycles, 4X double cross towers, 2X 48" round bars, 2 X upright with locking arms, nuts, bolt and instructions, mounts on existing raised side rails, will provide e.pictures upon request, $155. 909/621-9722.

CHAIR for office, leather, black, tilt & swivel, pneumatic height adjust, great shape, $40 cash only. 661/297-0219.

COFFEE MAKER, Braun, 10 cups, white/black, like new, $30/obo. 626/791-6101.

COFFEE TABLE, $50; OFFICE CHAIR, $50. 248-1102.

COMPUTER POWER CONTROL CENTER, 5 power switches + 1 master switch, 5 surge-protected outlets + 2 modem/fax/phone jacks, new, $20; ORGAN, Yamaha 415 electronic w/13 pedals, 3 keyboards, 144 rhythm patterns, $2,000. 790-3899.

CONCERT TICKETS, Bruce Springsteen, Dodger Stadium, 8/17, loge. 626/794-0317.

COUCH, black foam futon-type, turns into a full-size bed, must sell, $75/obo. 626/791-7830.

DESK, office, tan metal, 5' long w/filing drawer. 425-0831.

DESK, solid oak, good cond., paid $800, sell for $300. 802-6612.

DESK, student/computer, with file & cabinet space, exc. cond., $99/obo. 790-5024.

DINING TABLE SETTING, all slate blue, 2 large oval tablecloths, 18 placemats, 18 napkins with rings, good cond., $50. 626/357-8210.

DINING TABLE, exc. cond., light wood, two drop leafs, comes with 2 matching chairs, must sell, $100/obo. 626/791-7830.

DISHWASHER, brand new, never used, Whirlpool Gold, model GU1200XTLS, black on stainless MSRP, $599, sell for $450. http://www.whirlpool.com/cgi-bin/ncommerce3/ExecMacro/product/product_spec.d2w/report?itemsku=GU1200XTLS. 388-4440.

DOG HOUSE, Dogloo XT for small dog (up to 45#), good cond., $40. 626/303-1927.

DOG HOUSE, Dogloo II igloo style, vent in roof, outside dimensions about 36" x 36", for medium-size dog, good cond., about 3 years old, $40/obo. 909/596-4390.

EXERCISE MACHINE, NordicTrack Pro ski-type, exc. cond., $100/obo. 626/449-1473 or 626/221-1155, John.

EXERCISE MACHINE, Body-Solid EXM-1500S, see at www.bodysolid.com, $350. 957-5382.

GOLF SET, left-handed, 9 irons (3-SW), 3 woods (1, 3 & 5), bag, balls, glove, tees and more, buy today, play tomorrow, $199/obo. 805/403-9864, Ed.

GUITAR ACCOMPANIMENT BOOK, Oregon Catholic Press + binder for English hymns, vol. I & II, 2003, barely used, $40. 626/840-0955, leave msg. for Mary.

HEADBOARD, walnut, single, $20; CARD TABLE, folding, Samsonite, & 4 folding chairs, $40; SEWING MACHINE, built in flip top cabinet with chair, $70, DRAFTING STOOL, $10. 790-3543.

HEADBOARDS (2), twin, maple with latticework, $25/ea. 626/284-9664.

HUMIDIFIER, ultrasonic, $20; TOASTER OVEN, $20; POWER SUPPLY, Micro-ATX, $5; CHASSIS & POWER, $8. bjchip@computer.org or 353-5479.

LAWN MOWER, Murray 3.5 hp gas mower, gas weed whacker, both for 50. 952-2192, Tom.

LOFT BED with desk, bookshelves, and mattress, Ikea, like-new condition, over $700 new, matching dresser also available, best offer. 714/524-5367.

MOUNTAIN BIKE, downhill, Sinky Kona Gold, 2001, height 15," disc brakes, exc. cond., barely used, paid over $1,500, sell $700/obo. 848-2214, Karen or Robby.

MOVING SALE: nearly-new furniture in vg condition, all prices are obo; TV/stereo cabinet, large teak, $850; bookcases, 2 Bonde style from Ikea, cherry color, 14 x 86" & 28 x 86", $275; end tables, 2 Indonesian teak with iron details, $130; tables, small bedside, wood with drawer & shelf, $225. 323/664-2672.

MOVING SALE: electric blanket (queen dual control), $30; coffee maker, Krups, $15; Seagate 80 GB drive $50; bookcase, $15; sheets, 2, 4 x 8 Marine grade 3/4" ply, (1/2 price) $35/each; Biostar Micro-ATX, built in sound and graphics, Duron 2G & 256 MB $110; speakers, $6; monitor, Princeton, 15," $20; monitor, Hitachi CM715, 19," $100. bjchip@computer.org or 353-5479.

MOVING SALE: household items, washer, $100; dryer, $100; refrig., $200; china cabinet, $100, 2 3-seat sofas, $100/ea; center oak/gls table, $30; rocker w/ottoman, $50; all must go. 246-7365.

MOVING SALE: chair, black leather, $100/pair; loveseat, $50, entertainment center, $50; cocktail table, 39" octagonal glass, $75; washer, Maytag (a9800) and gas dryer (dg 9800), $300; blower, Echo PB1000, $80; aquarium w/stand, 60 gal., acrylic, $120; fertilizer spreader, $15; speaker stands, Sanus, $60/pair. 246-2319.

OPERA TICKETS, 2 for Nicholas & Alexandra, Sept. 23 and 2 for Madam Butterfly $31/each ticket, Feb. 18, 2004. 352-3244.

ORIENTAL RUG, about 4 ft. by 6 ft., dark blue with patterns, hardly used, $50. 626/840-0955, leave msg.

PDAs, 2 Handspring Visor Neo, 8 MB, includes docking cradle w/USB cable for connection to desktop and carrying case, both in excellent condition, $50 each. 425-0831, Peter.

PICNIC TABLE with benches, redwood, table is 70" x 32", good condition, but needs paint or stain, $50. 626/445-5214, Bob.

PLAYER PIANO, 1920s, Henderson, Chicago, Gulbrunson Player Mech, $300. 626/797-8562.

PORT REPLICATOR, for IBM Thinkpad, works with T20, T21, A20, A21, or X, R series, like new, $85; CARD SHUFFLER, Johnson, collectible, all-metal construction with the exception of the friction wheels which drive the cards and the carved-wood dowel handles; stands ~6" handle-high, and ~9" by 6," flanges and handle inclusive; $35; DIET TAPES, Jenny Craig, set of 14, $50. 790-3899.

REFRIGERATOR, Kenmore Coldspot with icemaker, 14 cu ft., white, ~3 yrs old, exc. cond., $350/obo. 626/446-2989.

SHOVELS, $2/ea. 626/357-8210.

SOCCER CLEATS, Puma Cellerator GCi FG, brand new, never used, men's size 8, women's size 9.5, photo w/ad at JPL Store and http://www.soccer.com, retail $165 + tax, sell $80. 846-1280, Nancy.

TABLE, glass top, 1/2" thick, 1" beveled edge, 4' by 6' with glass base plus 4 Parsons chairs, taupe color, walnut-colored wood legs, includes removable suedette custom-made chair covers, exc. cond., $350/set. 626/345-9850, Park or June.

TEA SET, pottery, made by Maine artisan, nautical theme, matching lighthouse design on all pieces, incl. tea pot, creamer, sugar, platter, small serving bowl, 2 mugs, 2 Japanese tea cups, never used, $100/set. 249-4316.

TOY WOOD CONSTRUCTION SET, Brio Mech Set 4, 152 pieces plus work board, very good cond., original cost ~$150, sell for $40. 626/303-1927.

TREADMILL, Image 10.6; 2.5 hp, 0-10 mph, 1-12% power incline, cordless pulse sensor, programmable, great condition, $500. 249-9534.

TREES: red banana plant 5' tall, $60/obo; fish tail, 6' tall, $80 obo; fichus, >10' tall, braided, in 30" plastic pot, $250/obo; ceramic bowl, gray, 2' diameter w/planted geraniums, $40/obo. 626/791-6101.

WEDDING GOWN, white duchess silk sheath by Amsale, low back, gorgeous detachable train, fit ~size 2 to 4 American, elbow length white tulle veil, $1,000/for set/obo. 249-4316.

Vehicles / Accessories

'93 ACURA Integra GS Hatchback, good cond. 97K mi. red, 5 sp, a/c, moon roof, new tires, belts, brakes, H20 pump, orig. owner, $4,200. 626/794-9358.

'98 ACURA Integra LS hatchback, vg, 45K, blue, 5 spd., a/c, moon roof, cd, alarm, just had 45K service, dlr. maint., all records, good mpg, orig. owner, $10,500. 626/577-2764.

'90 ACURA Legend LS, loaded, runs exc. 128,000 mi., orig. owner, $3,500. 626/445-4497.

'71 CHEVROLET Nova SS 350, new interior buckets, console, $4,400 or willing to trade for pickup of equal value; '70 HARLEY DAVIDSON FLH, all black & chrome, beautiful bike, outlaw style, needs the right owner, runs sweet, $10,000, or willing to trade for pickup of equal value; both for $14,000. 631-8899, Marty, lv msg.

'75 CENTURY 18" Bowrider Trihull, 85HP Chrysler (just rebuilt) outboard on American trailer with new tires, new top, full cover and other extras, $2,700/obo. 626/449-1473 or 626/221-1155, John.

ELECTRONIC AUTO TEST SET, includes an analog ignition oscilloscope that displays both primary/secondary parade and raster waveforms plus a full function analyzer with timing light all on a chrome rollaway cart, $500. 249-6071.

'92 FORD Mustang LX convertible, 2.3L, 79K miles, white w/red interior, power windows/ locks, cruise, cd player, $3,850/obo. Chris, 626/395-1262, cianci@caltech.edu.

'98 DODGE Durango 4 x 4 SLT, exc. cond, red ext., camel leather int., loaded, seats 8, side steps, grill, privacy glass, tow package, new trans, $11.9K/obo. 949/837-4341.

'92 FORD Aerostar XLT, extended minivan, dark green, 118K mi., runs good, new brakes, new front struts, good tires, rear seats fold down flat for carrying large items or can be removed entirely, $2,500. 626/462-0249.

GREASE/GEAR MANUAL PUMP with 5-gal. container, includes 6 ft of 3/8 high-pressure hose with standard coupler, exc. cond., $40; BRAKE BLEEDER KIT, services most brake systems, 1.5-gal. capacity, includes adapters for Ford and GM plus VW and Honda, exc. cond., sells new for over $400, sell for $115. 249-6071.

'03 HONDA Accord EX, loaded, 8K mi., T.O.P., $295/mo. 626/398-8679.

HONDA nosemask, purchased for '98 Accord coupe, like new, $75/obo. 626/449-1473 or 626/221-1155, John.

'93 INFINITI G20, black with gray interior, loaded, sunroof, 5 spd, always maintained, low miles, must see and drive, $5,250. 909/702-2326.

'84 MAZDA RX-7, runs well, red, gray int., very clean, 5-speed manual transmission, cruise control, radio and cassette deck, sun roof, a/c needs repair, only second owner, all service records available, 232,000 mi., Kelley Blue Book "Private Party Value" $1,150. 562/433-2795.

'99-00 MERCURY, Cougar Razzi, body kit match, painted silver & 18" Velox rims, silver w/polished lip, less then 500 miles on Nitto 555 tires, size: 225/35/18, retailed everything bought for $3,000, will sell everything for $1,500. 626/422-0080, Alicia.

TIRES/RIMS, 4 Goodyear Eagle tires (P285 60R16) mounted on 4 American Racing rims (6-lug), originally $1,600, sell $600. 897-1203 or v.pic@verizon.net.

'95 TOYOTA Celica, silver, automatic, 115,000 miles, 1 owner, no accidents, new tires, new belt, alignment, been perfectly maintained and is in excellent condition, Blue Book value $5,500, sell for $4,500/obo. 626/359-0220.

'94 TOYOTA Landcruiser, 119 K mi., very clean, $12,500. 626/398-8679.

'00 VOLKSWAGEN Jetta VR6, 31K mi., silver, auto, sunroof, stereo, air, all power, exc. cond., $13,800. 366-0008.

'95 VOLVO, 850 GLT wagon, 92,000 miles, exc. cond., $8,900. 248-1102.

Wanted

CONDO, GUESTHOUSE, OR APT., for long-time JPLer & husband, no pets or children, needed Oct. '03-June '04 (during construction of new home). 249-4179.

FLUTE OR C INSTRUMENT PLAYER, to practice with guitar for occasional performance for seniors or church functions. 626/840-0955, leave msg.

PATIO DOOR VERTICAL BLINDS, vinyl, to fit 94" wide x 84" high opening, includes all mounting hardware. 246-2319.

SLOT CARS, old, & model kits, cars, boats, airplanes. 626/919-4357, Ralph.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

VOLLEYBALL PLAYERS, coed, no beginners please, Tuesdays 8 to 10 p.m. at Eagle Rock High School, $4/night. 956-1744, Barbara.

VOLUNTEERS, to perform music for senior entertainment and church fund-raising. 626/840-0955, leave msg.

Free

CLEAN FILL DIRT, 14 cu. yds. avail., haul as little or as much as you like, near Los Robles/Jackson, Pas. 626/791-3103, dtrask6@its.caltech.edu.

SOAKER HOSE, 75 ft (a 50 & a 25) in good condition, in La Verne. 909/593-4046 or vivdavies@earthlink.net.

Lost & Found

FOUND: silver earring, Thursday, Aug. 7, on front seat of the east lot bus. Ext. 4-6668.

For Rent

ALTADENA, rear studio apt., kitchen, bath, living/bd., unfurn, a/c, utils inc., $650. 626/379-5749.

ARCADIA apt., 2 bd., + den, 1 ba., garage, remodeled, washer/dryer in unit, a/c, dishwasher; spacious, walking distance to shops, exc. neighborhood, no pets, water/gardener/trash included, $1,290. 626/576-7333.

HACIENDA HEIGHTS, 2-story house/condo, 3 bd., 3 ba. plus den, 2-car garage, guest parking, beautiful yard, upscale planned community w/neighborhood park, near good school district, prefer non-smoker, no pets, $1,800. 626/356-4615, Charli, or 626/823-1572, Sanne.

LA CRESCENTA, peaceful st., 3+2, family rm., lndry rm., C/A, hardwood flrs, patio, fenced yard., mtn. view, gardener pd., Dunsmore school, no pets, credit ck. req'd., $2,100. 550-1989.

LA CRESCENTA, cozy house on a private setting high above Foothill, 2 bd, 1 ba., pool, very quiet, $1,550, includes gardener and pool service. 952-6007.

MONTROSE home, 2 bd., 1 ba., extra room, 2-car garage, yard, hardwood floors, fireplace, laundry provided, quiet, 4 min. to JPL, close to shopping areas, $1,575. 248-5068.

MONTROSE townhome, 2 large bd., 2 full ba., 2-car garage, gated community, top rated school, near JPL campus, $1,500. 800/205-5009.

N. SAN GABRIEL, for lease, 3 bd. + 1.5 ba., house, 2-car garage, patio, exc. neighborhood, no pets, includes gardener service, $1,700, on approved credit. 626/458-3852.

PASADENA, spacious 2-story condo, 3 bd., 2.5 ba., prestigious community, beaut. inter., bright ktch., prof. landscape, ctrl. air & heat, close to shop., cozy LR w/FP, end unit, frml DR, hdwd. flrs., immac. cond., close to schools, $1,750. 626/396-9024.

PASADENA, unfurnished townhome-style apartment, 2 bd., 1.5 ba., patio, dishwasher, central a/c, new carpet & floors, refrig. & stove, laundry, parking, $1,325 plus utilities. 626/429-3677.

PASADENA, furnished 2 bd., 1.5 ba., apartment with central a/c, laundry, patio, parking, close to Caltech & JPL, great for co-ops or interns, $1,350 plus utilities. 626/429-3677.

PASADENA, spacious 1 bd. luxury apt, stall shower and tub, huge closets, fireplace, tiled entry, large kitchen, lg. windows, light & airy, 6-unit bldg, secur. pkg., front apt. $1,150. 626/449-1155.

SIERRA MADRE townhouse to share with Caltech alumna, 1,000 sq. ft. apt, large patio, 2 bd., 1.5 ba., quiet street, garage parking, washer/dryer, $605 + 1/2 utils. 626/355-4838, Heather.

TUJUNGA, Seven Hills area, room in 3 bd., 2 ba., house, in the mountains, north of the Burbank Studios, quiet neighborhood with great views and hiking trails, month-to-month lease for respectful non-smoking professional, some kitchen and laundry privileges, utilities shared. 425-8550.

Real Estate

MT. WASHINGTON house, next to Glendale/ Pasadena/Eagle Rock/Occidental College, 2,000 sq ft., large custom 3 bd., 2 1/2 ba., 2-car garage, lots of storage, exc. Mt. Washington elementary school, 12 minutes from JPL, canyon views, quiet neighborhood, $429,000. 626/403-0446.

Vacation Rentals

BIG BEAR LAKEFRONT, luxury town home, 2 decks, tennis, pool/spa, beautiful master bd. suite, sleeps 6. 949/786-6548.

GREEN VALLEY LAKE, near Big Bear, furnished cabin, cable tv, 1 bd., 1 ba., large living room, sleeps 6, fully equipped kitch., fenced patio, lake swimming, fishing hiking, $100 night, winter $120. 949/859-2237 or 323/256-1031.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps 4, laundry fac., Low Season rate $105/nite/2, High Season rate $120/nite/2, $15/nite/add'l person. 949/348-8047, or jackandrandy@cox.net.

MAMMOTH, Snowcreek, 2 bd., 2 ba., +loft, sleeps 6-8, fully equipped kitchen incl. microwave, D/W, cable TV, VCR, phone, balcony w/view to mtns., Jacuzzi, sauna, streams, fishponds, close to Mammoth Creek, JPL discount. 626/798-9222 or 626/794-0455 or valerie@gps.caltech.edu.

OCEANSIDE, condo, fully furn. 2 bd., 2 ba., fireplace, full kitchen, quiet, relaxing, beautiful beachside setting, with BBQ, pool, spa, game room, great ocean view; easy walk to pier and restaurants, sleeps 8, available weekly or monthly. 909/981-7492, Darlene or dfhauge@yahoo.com.

OCEANSIDE, on the sand, charming 1 bd. condo, panoramic view, walk to pier & harbor, pool/spa, game rm., sleeps 4. 949/786-6548.

'01 PACE ARROW 34-foot RV, queen bed, sofa bed and dinette bed, monthly rentals only, $3,000 in advance plus $1,000 security deposit, you pay insurance and gas, JPL employees only, no smoking or pets. tahoemike@earthlink.net, 530/525-7334.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean vw., pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.

JPL'S ONLINE NEWS SOURCE

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Universe

Jet Propulsion Laboratory

Inside

August 29, 2003 • Volume 33 • Number 17

The JPL-managed Space Infrared Telescope Facility (SIRTF) successfully launched from Florida's Cape Canaveral Air Force Station at 1:35 a.m. Eastern time Aug. 25 (10:35 p.m. Pacific time, Aug. 24) aboard a Delta II launch vehicle.

SIRTF on its way

Flying eastward over the Atlantic Ocean, the new observatory entered an Earth-trailing orbit—the first of its kind—at about 43 minutes after launch. Five minutes later, the spacecraft separated from the Delta's second and final stage. At about 2:39 a.m. Eastern time (11:39 p.m. Pacific time, Aug. 24), about 64 minutes after takeoff, the NASA Deep Space Network station in Canberra, Australia received the first data from the spacecraft.

Following the picture-perfect launch, SIRTF was positioned exactly where ground controllers wanted it to be, trailing behind Earth as it orbits the Sun. The spacecraft is working and communicating well with the Deep Space Network antennas, receiving commands and returning telemetry data.

The spacecraft entered a stand-by mode when its star tracker did not lock on to its planned targets within the expected 60 seconds. This possibility was anticipated, and therefore engineers had already prepared a contingency plan, which has been activated. The star tracker did subsequently lock onto its targets and engineers believe the delay is likely due to higher-than-expected background noise levels.

The operations team also investigated two thrusters that were somewhat warmer than expected, and some inconsistent telemetry points from the cryogenic telescope assembly.

"These types of anomalies are expected in a space observatory of this size and complexity," said Project Manager David Gallagher of JPL. "The team is ecstatic with the successful launch and the way the mission is progressing overall. We eagerly await the start of science observations."

On Wednesday, Aug. 27, initial checkout of the pointing and control system was completed. Pointing performance met expectations, and pointing stability or "jitter" over a 10-minute period was excellent. During a test of the reaction wheel system, which controls SIRTF's orientation, one of four reaction wheels was unable to supply the requested torque. (Only three reaction wheels are required to operate SIRTF; any one of the four can be regarded as redundant.) The fault protection system responded correctly by turning off that wheel and putting SIRTF in safe mode. Additional analysis is in progress.

The next milestone will occur when the telescope's dust cover is opened on Aug. 30. This event occurs during the mission's two-month in-orbit checkout, which will be followed by a one-month science verification phase. After that, the science mission will begin a quest to unlock some of the oldest cosmic mysteries.

SIRTF will use infrared detectors to pierce the dusty darkness enshrouding many of the universe's most fascinating objects, including brown dwarfs, planet-forming debris discs around stars and distant galaxies billions of light years away.

For more information about the mission, visit their Web site at *http://sirtf.caltech.edu*.

Teen has 'dream science vacation' at JPL

By Mark Whalen

Many visitors to Southern California have Disneyland on their itinerary. So when R.J. Gross and his family made their way here from Pennsylvania earlier this month, the Happiest Place on Earth was definitely a target destination.

This wasn't the priority for R.J., however. As a matter of fact, the 15-year-old aspiring robotics engineer chose JPL as his destination after winning the Discovery Channel's Science Challenge, a national middle-school science contest, that allowed him to choose a "dream science vacation" anywhere in the United States.

Gross' entry in a regional science fair about the effect of light-emitting diodes on planaria regeneration caught the attention of the Discovery Channel, which offered him an application in the contest. Out of 4,000 entries, Gross was selected as a finalist, competing among 40 students in Washington, DC.

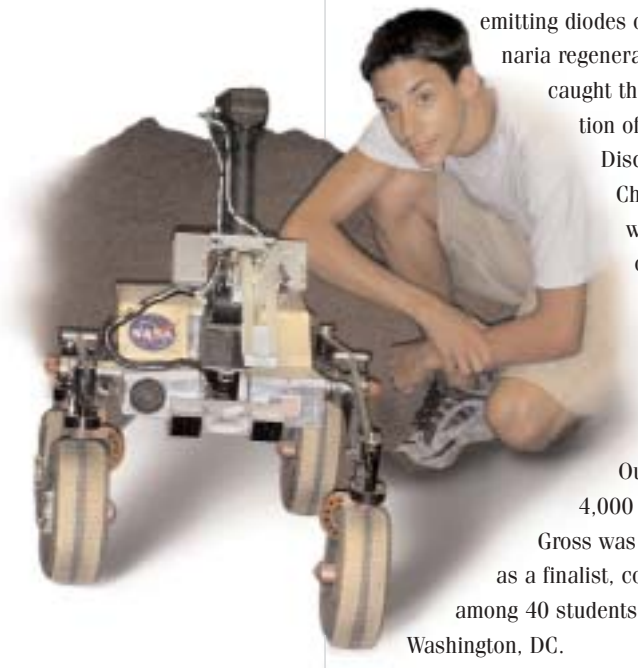


Photo by Whitney Clavin

A 250-word essay about his dream science trip sealed his and his family's first visit to the west coast.

Gross calls robotics his hobby. He said his recent efforts have produced homemade paintball guns and an autonomous machine that can go through a maze, extinguish a candle and return to its starting point.

"I love robotics," Gross said. "When I looked for a place to go, I chose JPL because they're at the frontier of new robotics, paving the way for the future."

Gross, joined by his father, Roy, visited the Lab Aug. 11-12 for a special tour of JPL, and the teenager certainly got his fill of what robotics is all about. At the Mars Yard, rover integration and test engineer Jessica Collisson showed off the full-scale models of the Mars Exploration Rovers. Terry Huntsberger showed him robots in development that walk up inclines. "Those walking robots were ingenious," R.J. said. "Mind boggling."

He was also somewhat surprised, and delighted, to learn that the Lab is so much more than robotics. He visited with oceanographer Dr. Bill Patzert, who explained JPL's Earth-imaging satellites. "It's interesting how they integrate science and robotics to find El Niño," Gross said. His visit also included the Spacecraft Assembly Facility and the ion engine test chamber. Before departing, he chatted with JPL Director Dr. Charles Elachi.

Gross and his family, from Lansdale, Pa., a Philadelphia suburb, eventually did see Disneyland and other tourist destinations, but the youth's "behind the scenes" JPL visit stands out.

"I got to go where most people don't get to go," Gross said. "It was really cool."

Software aids firefighters

By Nancy Lovato

IF A FOREST CATCHES FIRE and no one is around to see it, can it call for help? The forest cannot call, but thanks to new technology developed by JPL in collaboration with the Goddard Space Flight Center, firefighters may get the word faster through new, high-tech eyes in the sky.

The new software helps link NASA's Earth science satellites together to form a virtual web of sensors with the ability to monitor the globe far better than individual satellites. An imaging instrument flying on one satellite can detect a fire or other hazard, and automatically instruct a different satellite that has the ability to take more detailed pictures to take a closer look. If the images show that a potential hazard does exist, the responding satellite provides data to ground controllers, who then report the fire to forest officials and to an interested science team.

"Essentially, we are adding the response mechanism to the detection process," said Dr. Steve Chien, JPL principal scientist in artificial intelligence. "This is a first step to enabling users of satellite remote sensing data to specify the kind of data they want, such as forest fires or floods, rather than the traditional request to, say, look at northern Montana."

One of the core components in this effort is the Science Goal Monitor system being developed at Goddard, which enables scientists to specify what to look for and how to react in descriptive rather than technical terms. Then the system monitors science streams of data to identify occurrences of the key events previously specified by the scientist.

Using the sensor web method, investigators no longer have to rely on after-the-fact data analysis to determine what happened. The information can be used to rapidly respond to hazardous events such as forest fires.

For example, moderate-resolution imaging instruments that fly on both NASA's Terra and Aqua spacecraft observe the entire globe every day. The instruments' data is automatically processed on the ground within hours of acquisition by the Rapidfire Center at the University of Maryland. If this processing detects a hot spot, scientific criteria can be used to automatically redirect the Earth Observing 1 satellite to provide high-resolution images. When that information comes back to a scientist for interpretation, it is made available to forest officials to determine the appropriate response. All this can happen in 24 to 48 hours, compared to a typical lead time of 14 days for preplanned observations.

News Briefs

Donnellan honored by women's group

DR. ANDREA DONNELLAN, deputy manager of the Earth and Space Sciences Division, is a co-winner of Women in Aerospace's Outstanding Achievement Award for 2003.

Criteria for the award include noteworthy achievement on or contributions to an aerospace project or program that represents a breakthrough or milestone in the field; commitment to professional growth; and service as a role model or mentor that shows dedication to the advancement of women in aerospace.

Dr. Andrea Donnellan

Donnellan was cited for developing a 25-year plan for applying space technology to study the solid Earth as part of NASA's Solid Earth Science Working Group. The organization said Donnellan's work has demonstrated the value of technology for understanding earthquakes and volcanic hazards.

She was also honored for serving as a mentor to girls and women from elementary schools to professional levels.

The awards ceremony will take place in Washington, D.C., on Sept. 16.

Women in Aerospace is a nonprofit organization dedicated to expanding women's opportunities for leadership and increased visibility within the aerospace community. Members share an interest in a broad spectrum of aerospace issues, including human spaceflight, aviation, remote sensing, satellite communications, robotic space exploration, and policy issues.

Donnellan has been a geophysicist at JPL since 1993. Her current focus is developing the Solid Earth Research Virtual Observatory (SERVO) to use computational technologies to study earthquake physics and fault systems.

For more information on the awards and Women in Aerospace, visit *http://www.womeninaerospace.org.*

Pantazis Mouroulis

Mouroulis cited by optical society

PANTAZIS MOUROULIS, a principal optical engineer in the Space Experiments Systems and Technology Section 387, has been elected a Fellow of the International Society for Optical Engineering.

With JPL since 1996, Mouroulis was selected for achievement in the areas of optical engineering and design, especially visual instrumentation and imaging spectroscopy. The organization said he has been a major contributor to the understanding of the effect of aberrations on perceived image quality. "His work resulted in concrete recommendations for the optical designer in the field of visual instrumentation, including a method of optimization and assessment. In the area of imaging spectroscopy, Mouroulis developed compact spectrometer forms to unprecedented levels of performance, allowing the extraction of accurate spectroscopic information from remotely sensed data," the citation said.

Mouroulis has also helped develop blazed gratings on curved substrates that are becoming a technology of choice for space applications.

Award winners were honored at a banquet on Aug. 6.

Dubovitsky to top engineering event

SERGE DUBOVITSKY of Section 3462, a 17-year JPL employee and currently chief architect for the Terrestrial Planet Finder interferometer, has been selected to participate in the National Academy of Engineering's Frontiers of Engineering symposium.

The event will be held Sept. 18-20 at the National Academies' Arnold and Mabel Beckman Center in Irvine and will explore topics in environmental engineering, nanotechnology, counter-terrorism technologies and infrastructure protection, and biomolecular computing.

Serge Dubovitsky

The symposium will bring together 83 engineers age 30 to 45 who are performing leading-edge engineering research and technical work. The participants—from industry, academia and government—were nominated by fellow engineers or organizations and chosen from a field of nearly 170 applicants.

The National Academy of Engineering is an independent, nonprofit institution established in 1964 that operates under the congressional charter granted to the National Academy of Sciences in 1863.

New Weight Watcher series available

JPL and contractor employees are invited to join either the successful Weight Watchers at Work series or online program. Both programs have limited special offers. Weight Watchers has recently announced its newest program, called FlexPoints.

The first meeting of the new Weight Watchers at Work series will be held on Tuesday, Sept. 2, in Building 183-328. The cost for the 17-week series is $186.15 (based on a $10.95 charge for each meeting) paid by check, cash or one of the following credit cards: Visa, MasterCard, Discover or American Express. A three-check payment plan is available for those who sign up on Sept. 2. Three checks (all dated Sept. 2) payable to Weight Watchers for $62.05 each are collected at the first meeting and are deposited Sept. 2, Oct. 2 and Nov. 3. Those who pay for 17 weeks receive the 18th week free.

JPL and contractor employees are welcome to join the series at any time. Those who join after the second week are required to pay $11 for each remaining meeting at the time they enroll.

All meetings are held Tuesdays from 11:30 a.m. to 12:30 p.m. Meeting locations may vary but attendees will be updated via e-mail and the internal website. This series runs weekly through Jan. 13, 2004.

A minimum of 20 paid members is required for this on-Lab program.

In the new Weight Watchers Online program, JPL and contractor employees can get the Weight Watchers Winning Points plan. Weight Watchers Online is designed for those who are unable to attend meetings, and features tools built for efficiency, where employees can track their own progress online as well as keep a running record of foods eaten and weight loss achieved. The normal three-month subscription fee for Weight Watchers Online is $59.95. However, for a limited time, JPL employees pay only $49.95. Visit JPL's special customized gateway site at *www.weightwatchers.com/cs/jpl* to learn more and to sign up.

This and additional information can be found on the JPL Weight Watchers website at *http://eis.jpl.nasa.gov/hr/esr/wellness/wwatchers.htm* or call Laurie Lincoln at ext. 4-1612.

Express Mail, FedEx differences

JPL Mail Services provides the following information to clarify the differences between JPL's U.S. Postal Service Express Mail and FedEx services.

U.S. Postal Service Express Mail is handled by the Mail Center in Building 171-106. It is available for both domestic and international mailings. Express Mail must be received at the Mail Center by 3 p.m. to allow sufficient time for processing.

If you're sending International Express Mail, you must fill out two forms: the International Mail Self-Certification form (JPL 0281-1-S) and the U.S. Postal Service Custom form (PS 2976).

A JPL project and task number is required for Express Mail.

For information regarding U.S. Postal Service Express Mail, call ext. 4-2380 or 4-2381.

The Shipping and Receiving Group in Building 241-104 handles FedEx and all other courier services. Bring packages or call Material Movement at ext. 4-7779 to have the packages picked up for delivery to the Shipping Group. Packages to be shipped the same day need to be received by the Shipping Group no later than 2:30 p.m. in order to ensure sufficient time for processing prior to pickup by the courier.

Do not place Federal Express or other courier packages in the JPL mailboxes located in Lab buildings or in the outside green mailboxes located at various sites on Lab.

FedEx, UPS or other courier services will not deliver to a post office box number. For delivery to a post office box, it is recommended that you use U.S. Postal Service Express Mail.

For information on outbound FedEx or other courier services, call JPL Shipping, ext. 4-2713 or 4-8511.

For information on inbound FedEx call JPL Receiving services: 3-2990 or 3-3526.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Group—Meets the first Friday and third Thursday of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in the Wellness Place, Building 167-111.

Working Parents Support Group—Meets the third Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Tuesday, September 2

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

Wednesday, September 3

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

Thursday, September 4

JPL Gun Club—Meeting at noon in Building 183-328.

New Maintenance, Operations Services—An informational meeting will be held from 1:30 to 3:30 p.m. in von Kármán Auditorium on the new contract awarded to All-Star Services, which will begin providing maintenance and operations services at JPL beginning Sept. 17. Section and Division administrative staff, building coordinators and others associated with requesting facilities maintenance services are particularly invited.

Sunday, September 7

Caltech Women's Club—An evening of family fun will be offered at the annual Fall Family Potluck from 4 to 7 p.m. at Tournament Park. The club will provide the plates, cups, utensils, drinks and a bounce house; just bring your family and a potluck dish. For more information, call Katie Clark at (626) 403-7163.

"Has Science Found God?"—Dr. Victor Stenger, emeritus professor of physics at the University of Hawaii and adjunct professor of philosophy at the University of Colorado, will deliver this Skeptics Society–sponsored lecture at 2 p.m. in Caltech's Baxter Lecture Hall. Free admission for the JPL/Caltech community. For more information, call (626) 794-1301.

Tuesday, September 9

Folk Music—Fiddle and mandolin player Peter Ostroushko will join guitarist Dirk Freymuth for an 8 p.m. performance at Caltech's Beckman Institute. Tickets are $15 for adults and $5 for children under 12. For more information, call (626) 395-4652, or check the Folk Music Society website at *http://www.folkmusic.caltech.edu.*

JPL Stamp Club—Meeting at noon in Building 183-328.

Tues.–Wed., Sept. 9–10

Investment Advice—TIAA/CREF representatives will be available for one-on-one counseling. For an appointment, visit *www.tiaa-cref.org* or call (877) 209-3140, ext. 2614.

Wednesday, September 10

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Debbie Llata at ext. 3-3690 for information.

New test facility opens

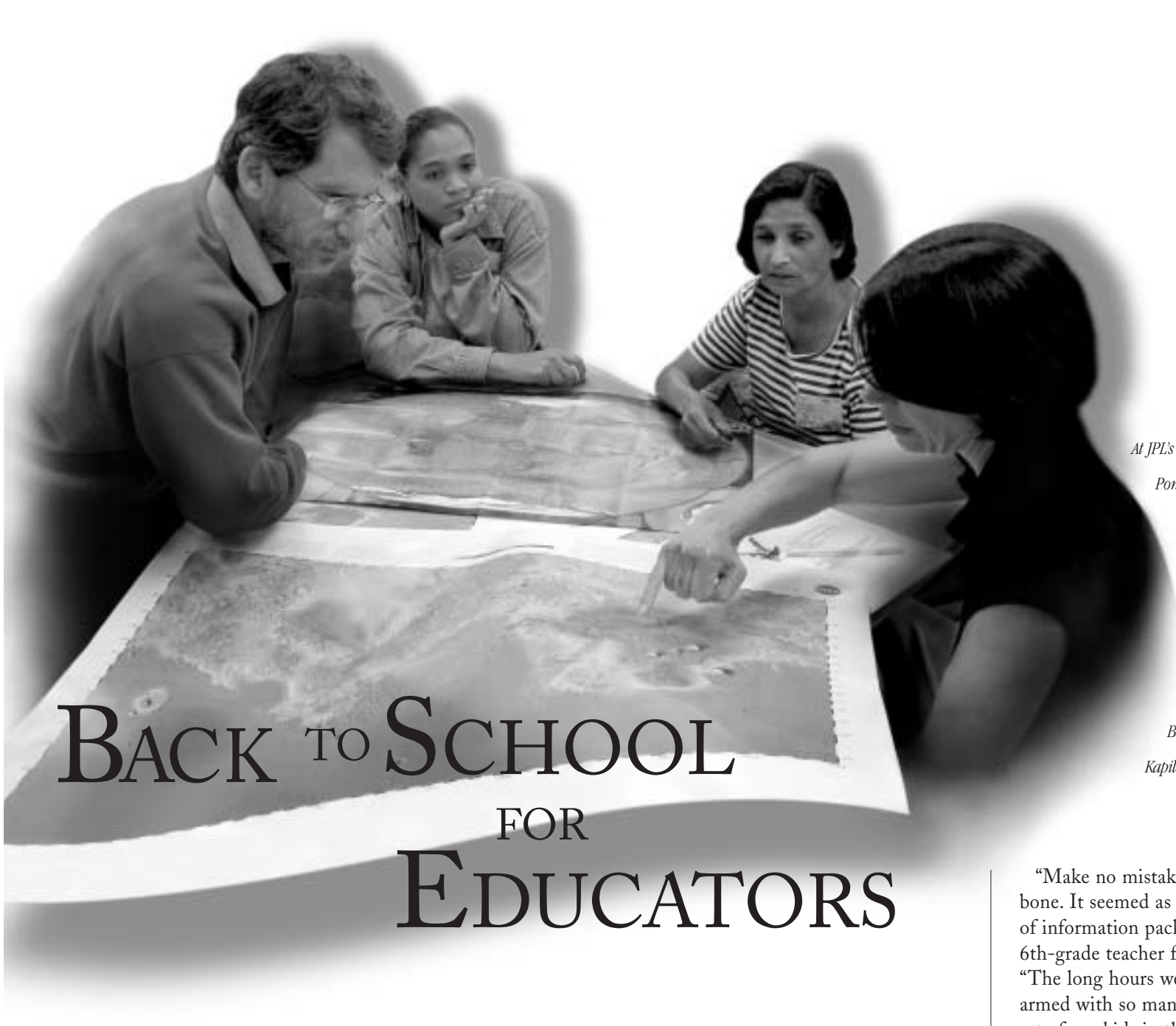
Section 513 has dedicated its new electromagnetic compatibility (EMC) test facility, a 16' x 24' x 12' high radio frequency shield room located in the new Building 325, located near JPL's other major environmental test facilities in Buildings 144 and 150.

The facility is equipped with absorber material that additionally makes it a radio frequency anechoic room. The new building will be used for testing larger items than will fit in the existing main EMC test lab in Building 179. For example, the High Energy Solar Spectroscopic Imager (HESSI), Microwave Limb Sounder and Thermal Emission Spectrometer instruments and the Mars Exploration Rovers have been tested in the new shield room. Those tests occurred in the shield room's former locations of Buildings 144-100 and 179-HB2. The shield room now has its permanent home in Building 325.

In addition its new location, the shield room has received two major upgrades: there is now a convenient, large 10' x 10' hinged double-door opening for test article access, and there is radio frequency anechoic material on the walls. Previously, test article entry was accomplished by tediously removing the 100-pound modular 8' x 4' wall panels. The doors will save a half day of effort for entering, and a half day at exit time when the article leaves the facility, as well as the wear and tear associated with the multiple moves of the wall panels. The radio frequency absorber will reduce room resonances that sometimes interfere with the accuracy of EMC measurements. Some of the radio frequency absorbers are on wheel-mounted panels that can assist projects at locations away from Building 325.

The facility can also be made available to outside organizations, as was the case for HESSI.

The existing EMC test lab in Building 179-120 will continue to be the most frequently used facility for that purpose. It is used to test smaller articles (as much as two meters size in the largest dimension). The Building 179-120 lab has the advantage of being adjacent to the Building 179 Assembly Test and Launch Operations test areas, where EMC test support also occurs. EMC test measurements can also be performed at remote locations, since most of the EMC instrumentation is transportable.



At JPL's Educator Resource Center in Pomona, NASA Explorer School team members use Mars images and data to select a safe and scientifically interesting landing site. From left to right are staff members from 153rd Street Elementary School in Gardena: principal Ira Berman and teachers Regina Jeffery, Kapila Bhuta and Linda Sutherland.

BACK TO SCHOOL FOR EDUCATORS

NASA's Explorer Schools Program debuts

By Charli Schuler

Would you hand your 12-year-old the keys to an automobile? How about a spacecraft or a deep-space antenna? With the exception of the car, NASA is all for it.

As part of the new NASA Explorer Schools program, local educators were selected to spend a week at JPL, obtaining the keys to the many exciting and interactive learning resources the agency has to offer. Those keys, metaphorically speaking, may open up a whole new world of scientific opportunities for preteen students and their families.

"This is a completely new program based on a team approach, in which teachers and administrators come together to impact local schools," said NASA Explorer Schools Program Manager Peg Steffen at NASA Headquarters. "The work at JPL is very much team-based, which provides wonderful examples of how teams come together to achieve common goals."

From July 26 through Aug. 1, 18 teachers and administrators from Washington Middle School, Pasadena; 153rd Street Elementary School, Gardena; Shirley Avenue Elementary School in Reseda; and Sycamore Hills Elementary School in Fontana attended lectures and workshops at JPL about the history and goals of space exploration, as well as the development of a NASA project from start to finish. Substantial time was spent on NASA and JPL educational activities and resources, as well as education issues in California. This included field trips to the Educator Resource Center in Pomona and the Mt. Wilson Observatory.

"We couldn't be happier with the way the summer workshop went and with the enthusiasm and professionalism of the team members," said David M. Seidel, manager of pre-college programs in the JPL Education Office. "They all got into the spirit of the program, and we covered a lot of territory.

"As a veteran teacher who has not had any formal math and science education for 30 years, I found the information fascinating and stimulating," said Linda Sutherland, a resource teacher at 153rd Street Elementary School. "The resource center was, and will continue to be, an invaluable source of materials to implement our NASA Explorer School Program."

Educators were introduced to resources like the Mars Student Imaging Project, which allows students to command an instrument on the Mars Odyssey via their classroom computer, and the Goldstone Apple Valley Radio Telescope project, which lets students control and collect science data from a Deep Space Network antenna.

At JPL, they were welcomed by Dr. Robert Parker, director of the NASA Management Office at JPL and a former astronaut. Among the highlights of their Lab visit were the Project Design Center, Inflatables Lab, MicroDevices Lab, In-Situ Instruments Lab, Fabrication Shops, Spacecraft Assembly Facility, Environmental Test Lab, Spaceflight Operations Facility, Multimission Image Processing Lab and presentations on Stardust and Deep Impact.

"Five years ago, I could only begin to understand all this information," said National Science Teachers Association member and Explorer Schools Educator Facilitator David Black, who helped the JPL Education Office schedule the sessions. "Now there are tremendous opportunities opening up for teachers and students that I wish I would have had as a student in high school."

The group also enjoyed a special opportunity to connect with the International Space Station through NASA's Ames Research Center for a question-and-answer session via downlink. Such exciting events were mixed with discussion sessions throughout the week, allowing the participants to process information and talk more about how to inspire the next generation of explorers.

"Make no mistake, the JPL staff worked us to the bone. It seemed as if we received two weeks' worth of information packed into one," said Jodie West, a 6th-grade teacher from Washington Middle School. "The long hours were worth it because now we are armed with so many projects to stimulate the interest of our kids in the subject areas of math, science and technology."

The Explorer Schools program, sponsored by NASA's Education Enterprise and the National Science Teachers Association, establishes a three-year partnership between the space agency and 50 carefully selected teams of educators who represent 30 states across the country. To maximize the impact on a broad range of students, more than half of the teams selected to participate in the program were from high poverty and minority areas. The teams visit NASA field centers during the summer to meet with science professionals and learn about the work at each center.

"This summer was just the beginning," Seidel said. "We are going to be working closely with the schools starting in September and continuing on for the entire span of their three-year commitment to help them implement their action plans.

"We exposed them to lots of materials, content and opportunities," he added. "But in order to really affect student appreciation of Earth and space science we have to find the handful of key programs and activities that resonate with the kids at each school. We will be working with the teams to fine-tune what NASA materials they use and how to use them effectively."

NASA plans to expand the NASA Explorer Schools program by 50 schools each year for an ongoing three-year cycle of 150 schools. A complete list of the first 50 Explorer Schools is available at *http://explorerschools.nasa.gov*.

Jodie West (left) and Helen Chan, teachers from Washington Middle School in Pasadena, create a model of a hidden surface that they have just mapped, while Deborah Collins and Tamorah Leslie (far right), teachers from Sycamore Hills Elementary School in Fontana, search for a safe and scientifically interesting landing site on Mars with Art Hammon of the JPL Education Office.

Service awards

For the period from June through July 2003, the following JPL recipients celebrating 25 or more years of service were invited to attend a luncheon and ceremony in their honor on Aug. 20:

45 years: Conrad Foster, Takashi Kiriyama.

40 years: Kenneth Evans, Rolando Jordan.

35 years: David Hermsen, Stuart Imai, Edward Rinderle Jr., Joseph Yuen.

30 years: Marc Adams, Mary Bothwell, Victor Chavez, Robert Irigoyen, Erik Ivins, Allan Klumpp, Michael Kobrick, Jack Mondt, Robert Preston, Ladislav Roth, Frank Stott, Henry Valtier.

25 years: Elroy Akioka, Genji Arakaki, Shari Asplund, Martin Barmatz, Shehenaz Bhanji, Jeffrey Boyer, James Carter, David Clough, Richard Cofield IV, Gregor Edwards, Rebecca Falcon, Thomas Glavich, Dwight Holmes, Ronald Hungerford, Bolinda Kahr, Edwin Kan, Julius Law, Michelle Leonard, Calvin Miyazono, Samih Mouneimne, Michael Orr, Thomas Pastorius, Joan Pojman, Abraham Riley, Frederic Rosenblatt, David Rosing, Arnold Ruskin, John Trauger, Deborah Vane, Thomas Yunck.

Passings

COLEMAN DAVID CARTER, 75, a retired flight parts specialist, died Aug. 8 in Madisonville, Kentucky following a brief battle with lung cancer.

He worked at JPL from 1961 to 1987 in Divisions 32, 33, 36, 38 and 51, and on almost every flight project. He transferred to Caltech in 1987 and worked on the Mars Observer Camera and Mars Global Surveyor until his retirement in 1991.

Carter is survived by his mother, Lillian; children Tracey, Coleman Jr. and Christopher; grandson Hanson; and stepsons Bill and Gary Buchanan.

Funeral services were held Aug. 12. In lieu of flowers, the Carter family asks that contributions be made to the Regional Medical Center, Merle M. Mahr Cancer Center Equipment Fund, 900 Hospital Drive, Madisonville, KY 42431-9985.

Letters

I would like to thank everyone for their prayers during the time of my brother's illness and his passing. The plant that I received from JPL was lovely. Your kind words and thoughtfulness was appreciated more than you know.

Karen Aldridge-Woodson

Classifieds

For Sale

BABY EQUIPMENT: Lil' Tykes racecar toddler bed, blue w/mattress & bedding, $80; Graco double stroller, navy print, $70; Ladybug baby bounce/activity seat, $25; Graco baby swing, navy print, $40. 661/255-8216.

BACKPACK, child's external frame, circa mid-1970s, good cond., total frame height 27", shoulder strap height 19," pictures and further details avail., $10. 249-4603.

BASKETBALL HOOP, portable, $60. 626/289-8799.

BED, rollaway, exc. cond., $50. 661/251-0512, eve.

BUNK BED, twin on top/qn. sz., folds into couch on bottom, cobalt blue metal frame, qn. sz., futon/cobalt blue included, $200. 626/289-8799.

CABINETS, two oak, 78" high, 34 " wide, 19" deep, both have etched & beveled glass doors. 626/963-5484.

CAMPING MEMBERSHIP, Thousand Trails/NACO nationwide motor home, $1,500. 626/963-5484.

CELL PHONES, Nextel, 2, i90c, w/car and desktop chargers, belt clip cases and manuals, both in exc. cond. 640-7364, Manny.

CHAISE, white with pillow, exc. cond., originally $600, now $200. 626/850-4378.

CLOTHING, women's: new dress, button front, sz. 16, red on red Jacquard (dressy) suede skirt, black, mid-calf length, $20; SHOES, women's, never worn, sz. 9M, designer slides & sandals: leather 1" heels, several colors, $20 (pd. $45); designer pumps, sz. 8 1/2 M, white fabric/lace inserts, 2" heel, $25 (pd. $90). 352-6611, eves.

COFFEE MAKER, Braun, 10 cups, white/black, like new, $30/obo. 626/791-6101.

COMPUTER, Compaq Presario 1200 laptop, model #12XL510A, good cond., 2 yrs. old, $700/obo. 562/923-4347, leave msg.

DESK for student, solid maple, 4-drawer, vg cond., $100. 352-6611.

DINING SET, linens, all slate blue, 2 large oval tablecloths 18 placemats & napkins w/rings, good cond., $40/all; SHOVELS, $2 ea. 626/357-8210.

DOG HOUSE, Dogloo II igloo style with vent in roof, outside dimensions about 36" x 36", for medium-size dog, good cond., about 3 years old, $40/obo. 909/596-4390.

DOG KENNEL, Petmate VariKennel, sz. XLG, for full-sz. dog, 39 d x 29 h x 27 w, door is 23 h x 19 w, door & side vents chrome plated steel, basically brand new, used indoors about 3 wks, pics avail., $100. 249-4603.

FISH TANK, 55 gal., glass, includes: black wood stand, air pump, filtration system, gravel, decorations, lights and freshwater fish, $300. 626/793-7344, Kim.

FISH TANK, 30 gallon, acrylic, $30; SPACE HEATER, new, oil, (70 new) $20; SPACE HEATER, small, $5; PING PONG TABLE, $25. 425-7176, Terri.

FURNITURE: bookcase, double, solid oak, 48 w x 70 h x 12 d, exc. cond., new $450, now $150; Ikea shelf, white, 61 h x 63 w x 12 d, $30; din. rm. set, blk, 4 chairs, $50; metal filing cabinets, legal-sized, nine 4-drwr units, two 2-drwr units, each $10. 626/449-3932.

FURNITURE & APPLIANCES: beige 19.6 cu. ft. side by side GE refrigerator w/ice-mkr., $100; county style dinner table w/4 chairs, $125; student desk w/book shelf, $30; solid wood rocking chair, $45. 626/303-7255.

MATTRESS + BOX SPRING + FRAME, queen, brand new mismatched set, bought in July for $200 by summer student who is returning to school, $150/obo. 617/699-5089, Laila or elias@mit.edu.

MOVING SALE: Italian style couch, seats 3, $400; dining table, cherry veneer, + 6 chairs, $400; kitch. table + 4 chairs, $100; sm. refrig., 7 cu. ft., $80. 310/795-8949, Mauro.

PRINTER, HP Laserjet 4L, incl. cables & extras, brand new in-the-box toner cartridge, exc. cond., $60. 626/281-8195, Hugo.

PRINTER STAND, mobile, faux wood grain, extending table top swings up and down, good cond., $60. 248-6062, Elizabeth.

RECLINER with ottoman, leather, new, "It's Showtime" style from True Seating Concepts at Best Buy, black with metal trim, still in box, $80/obo. 682-6760, Amy.

REFRIGERATOR, Kenmore side-by-side, 21 cu.ft., white, ice maker and cold water, exc. cond., $375 /obo. 342-4236.

SECTIONAL, white with pillows, exc. cond., original cost was $2,000, sell for $600. 626/850-4378.

SOCCER CLEATS, Puma Cellerator GCi FG, brand new, never used, men's size 8, women's size 9.5, photo w/ad at JPL Store and http://www.soccer.com, retail $165 (not incl. tax), sell $80. 846-1280, Nancy.

SOFA SLEEPER w/deluxe mattress, 4 yrs. old, exc. cond., 84," truffle color, $575/obo. 248-1793.

SPEAKER/AMP and microphone, two channel, 50 watt, only used about 5 times, good cond., $200. 248-6062, Elizabeth.

STEREOPHILES: Rotel RB-985 5 channel, THX, 800 watt, power amp; Rotel RDA 980 digital surround adapter; Rotel RDP digital audio processor; Rotel RSP 980 surround sound processor; slight cosmetic blemishes but all are in exc. working cond.; originally purchased at over $2,500, will sacrifice all 4 pieces for $650/obo. 249-9437, eves.

TABLE, 66" round, mosaic-tile blue field w/red & yellow accent on cast iron base, 8 matching, leather-covered chairs avail., new cond., make offer on all or part. 790-7129, Bill.

TREADMILL, Image 10.6; 2.5 hp, 0-10 mph, 1-12% power incline, cordless pulse sensor, programmable, great cond., $500. 249-9534.

TREES: red banana plant, 5' tall, $60/obo; fish tail, 6' tall, $80/obo; fichus, >10' tall, braided, in 30" plastic pot, $250/obo; ceramic bowl, gray, 2' diameter with planted geraniums, $40/obo. 626/791-6101.

WARDROBE, size 16 and 14, new suits, dress pants, skirts, jeans, tops some never worn; jeans, dress pants, and skirts $5, all from the Gap; never-worn items, $10; suits $10; or offer a fair price for the whole wardrobe. 425-7176, Terri.

TV, 19" color, w/remote, only 2 years old, works perfectly, $80/obo. 626/282-5815.

WHEELCHAIR CARRIER, roof mounted, good cond., paid $2,000, sell for $1,000; HAND CONTROLS, $150; SHOWER CHAIR, $20; WALKER, $20; CRUTCHES, $20. 626/968-6024.

Vehicles / Accessories

'85 BMW 635CSI, must sell, 2 dr., V6, good cond., automatic, pwr doors/seats, sunroof, ABS (4 whl.), AM/FM stereo/cass./CD box + more to see, 79K mi., runs great, $6,300/obo. 626/369-7832 or pnguyen_007@yahoo.com.

'73 CHEVROLET Nova, 2 dr, 350 V8, turbo 350 auto trans, a/c, PS, power front disc brakes, new custom upholstery, needs eng. work & some minor body work, $2,300/obo. 661/296-6260.

'71 CHEVROLET Nova SS 350, sale or trade, new interior buckets, console, $4,400 or trade for pickup of equal value; '70 HARLEY D. FLH all black & chrome, beautiful, outlaw style, needs the right owner, runs sweet, $10,000 or trade for pickup of equal value, or both for $14K. 631-8899, Marty, lv msg.

'97 FORD Contour GL, 4 dr., automatic, am/fm/cassette, power windows/door locks/steering, 55,390 miles, taupe color, $6,500. 790-7934.

'97 FORD Crown Victoria LX, 4.6L V8, exc. cond., keyless entry, 67.5K mi, full power, tinted windows, leather, near-new tires, shocks and battery, original owner, always garaged, $9,500. 626/335-0775.

'95 FORD Explorer XLT, 4WD, green/tan, auto, CD changer, loaded, 127K miles, looks and runs great, $5,400. 790-5538.

'97 HARLEY DAVIDSON Sportster XLH, new rear tire/brake pads/wheel bearing/chrome/clutch cable/top end (valves and 1200cc conversion), Screaming Eagle cams, stock and custom seats w/sissy bar + luggage rack; 6-gal. Fat Bob gas tank and 3-gal. flamed tank, saddle bags and crash bars; alum. polished like chrome, Thunderheader exhaust, custom handle bars, regist. Aug. 04, $5,295/obo. 626/584-4415, Ron.

'99 HONDA Prelude coupe, 2 dr., automatic, loaded, leather interior, sliding moonroof, alloy wheels, alarm, AM/FM/casette/muti-CD, only 40K mi., exc. cond., $15,700/obo. 714/508-7744.

'97 HONDA Valkyrie motorcycle, exc. cond., extra chrome, garage kept, purple/white, studded seats, leather bags, many accessories, 23K miles, showroom cond., see to appreciate, $7,800. 957-2852.

'95 HONDA Accord DX, dk. metallic blue, gray int., 5-speed manual, 138.5K miles (fwy.), exc. cond. inside & out, recently serviced, orig. owner, $4,500/obo. 310/821-5545.

'91 HONDA Accord EX coupe, great cond., 2 dr., green, pwr. windows, sunroof, a/c, cassette, manual, 159,436 mi., $3,500/negotiable. 626/844-8850, 626/744-3243, eves.

'88 HONDA Civic DX hatchback, silver, automatic, 126,000 mi., 1 owner, no accidents, well maint.; good, clean cond., blue book $1,770, sell for $1,500/obo. 249-5195.

'89 ITASCA Windcruiser, 32' class A motorhome, 22,000 mi., GMC 30 chassis, 454 w/Banks power pack, generator, queen bed island, 3-way appliances, 2 rooftop a/c, 2 TVs, VCR, antenna, connections for cable/satellite, backup CCTV, leveling jacks, tire pressure warning system, hitch receiver, lots of storage, very clean, $22,000. 626/335-7345.

'97 JEEP Cherokee, 69,000 miles, 4 wheel drive, original owner, 4 door, 4 liter, 6 cyl., cruise, air, tilt, AM/FM stereo, $6,300. 661/254-6445.

'96 MITSUBISHI Eclipse GS-T, 2-door hatchback, 4 cyl. turbo, 5 speed, 110K miles, 1 owner, runs great, power sunroof/locks/windows, 10-CD changer, $6,000/obo. 626/296-1810 or meyoung@sbcglobal.net.

'02 NISSAN Altima, 4 cyl., 5 spd., red with blond interior, tinted windows, loaded, ABS, EBD, side air bags, 16,500 miles, always garaged, perfect cond., $15,500/obo. 661/296-5769.

'90 NISSAN 300 ZX, 2-door coupe, just passed smog, delightful drive, black, leather interior, Bose radio, etc., gd. cond., gd. tires, maintenance info available, 181K mi., $4,500. 626/335-9361.

'92 OLDSMOBILE Silhouette minivan, white with tan leather interior, good cond., ~150K miles, $3,000. 957-3675.

'94 SATURN SL2, 4 dr., auto, air, am/fm/cass., ps. tilt, 26 mpg, exc. cond., dealer serviced life of car, maint. records, great student or 2nd car, $2,900. 249-4561.

TIRES, Dunlop Sport A2 High Performance, 4 new, 205/65R15 on Nissan Maxima whls, $150/all 4; listed on tirerack.com for $63/each, have receipt from tire store. 626/441-0150.

'01 TOYOTA Celica GT, 23,000 mi., like new, pwr sunroof/mirrors/locks/windows, alarm, tinted windows, 17' rims, carbon blue, 5 spd., a/c, tape/CD, tilt, original tires, $14,500/obo. 909/202-7934, Ronnie.

'97 TOYOTA Camry 4D LE sedan, white, 4 cylinder, vg condition, automatic, loaded, leather seats, tinted windows, 135K mi., $5,500/obo. 714/508-7744.

'02 VW Passat GLX, exc. cond., orig. owner, only 20K miles, black leather interior, loaded, has everything, great family wagon at $25,500. 248-5068.

'01 VW Jetta, 32K mi., silver, stick, sunroof, stereo (CD and tape), air, all power, exc. cond., $13,500/obo. 626/483-1838.

'01 VOLVO S40, midnight blue/black, loaded, AM/FM stereo/CD/cassette, power doors & windows, beautiful leather interior, 1 owner. 323/821-8297, Alex.

Wanted

CONDO, GUESTHOUSE OR APT., for longtime JPLer & husband, no pets or children, needed Oct. '03-June '04, during construction of new home. 249-4179.

GUEST HOUSE to rent, small, for quiet, solitary 18-year-old-son of JPL employee to live from Oct 1-June 30 while finishing senior year at La Canada High School, non-smoker, non-drinker, no pets, no loud friends, will pay up to $500/month. 626/794-0081.

HOUSE TO RENT, Santa Fe, N.M. skystonewoman@yahoo.com.

PIANO, used, for family use. 790-5765.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

STOVE/OVEN, vintage, clean or restored 1940-'50s style; O'Keefe and Merritt, Wedgewood, or Gaffers & Sattler for Pasadena historic bungalow. 626/794-9200, Brian or Kristy.

STUDIO SPACE, min. 500 sq. ft., gd. lighting, w/bathroom & sink accessible, to be used by an artist only in daytime, should be within 15 min. of JPL. 626/577-6638, Suzanne.

VOLLEYBALL PLAYERS, coed, no beginners please, Tues. 8 to 10 p.m. at Eagle Rock High School, $4/nt. 956-1744, Barbara.

Free

COMPUTER, Pentium III, 750 MHz system, includes monitor, printer, TV card, all software; for donation to educational charity/school only. 626/844-9286.

DESK, office, tan metal, 5' long w/filing drawer, you pick up. 425-0831, Peter.

For Rent

ARCADIA, 2 bd., 1.5 ba., house, formal living room/dining room, family room and big kitchen, $2,200. 626/445-3975, Rula.

ARCADIA apt., 2 bd., + den, 1 ba., garage, remodeled, washer/dryer in unit, a/c, dishwasher; spacious, walking dist. to shops, exc. neighborh'd, no pets, water/gardener/trash incl., $1,290. 626/576-7333.

EAST HOLLYWOOD, lg. single apt., 1 block/Metro and shopping, utilities pd., stove, ref, sec. bldg, newly decorated, $700. 310/377-0316, Gerri.

LA CRESCENTA, upper Briggs Terrace, spectacular views, quiet, isolated, 2 bd., 2 ba., + large view artist loft over garage, all on rim of 300-acre cyn., new kitchen being installed, 1/3 acre, hot tub, 15 min. to JPL, 2325 Maurice Ave, avail. about 9/15 - 10/1, $2,400 + sec., 1-yr. lease. 310/322-8513.

LA CRESCENTA, cozy house on a private setting high above Foothill, 2 bd., 1 ba., pool, very quiet, $1,650 includes gardener and pool service. 952-6007.

NORTH SAN GABRIEL house for lease, 3 bd., 1.5 ba. , 2-car gar., patio, exc. neighborhood, no pets, $1,700 incl. gardener, on approved credit. 626/458-3852.

PASADENA apt., 1 bd., part of duplex, ~900 sq. ft., large yard, spot in garage, 5 miles/JPL, walk to Old Town, $1,100 +$800 deposit. 617/642-6651, cell.

PASADENA, lg. 3 bd., 2.5 ba., 2-story townhome, quiet, lg. kitch., patio, vaulted ceilings, fireplace, carpeted liv. rm., cent. air/heat, fridge/washer/dryer in unit, water/trash/landscaping incl., assoc. pool, hot tub and sauna, close to JPL & Caltech, walking dist. to Old Town/Goldline/Metro, partially furn., avail. 9/1, $1,850. 626/644-5699, Lucas.

PASADENA condo to share w/non-smoking, cat-friendly, professional, 2 bd., 2 ba., 3 blocks/Caltech, unfurn. bedr. + ba., amenities incl. cent. air/heat, fireplace, parking, laundry, north-facing balcony, walk to Old Town, Lake Ave. Gold Line and more, avail. 10/1, 6-mo. lease, security deposit & references req'd., $1,100 + 1/2 util. 626/833-2961.

PASADENA, spacious 2-story condo, 3 bd., 2.5 ba., prestigious community, beaut. inter., bright ktch., prof. landscape, ctrl. air & heat, close to shop., cozy LR w/FP, end unit, frml DR, hdwd. flrs., immac. cond., close to schools, $1,750. 626/396-9024.

PASADENA, furn. & unfurn. townhome-style apts., 2 bd., 1.5 ba., patio, dishwasher, central a/c, new carpet & floors, refrig. & stove, laundry, parking, close to Caltech & JPL, $1,295-$1,350 plus utilities. 626/429-3677.

PASADENA, furnished apt. to share w/JPL co-op, 3 bd., 3 ba., townhome-style with patio, central a/c, laundry, close to Caltech & JPL, $650 plus utilities. 626/429-3677.

SUNLAND, fully furn. room in condo, share kitch./ba./laundry, garage parking, a/c, fireplace, pool, Jacz., tennis ct., 10 mi. to JPL, female preferred, non-smoking, $500 incl. util. + $400 security deposit, references. 352-3112.

WEST PALMDALE, 2-story home,3 bd., 2.5 bath + loft , in-ground pool and spa, big yard, on cul-de-sac, close to shopping, schools & park, $235,000. 661/273-4074.

Real Estate

CASTAIC LAKE, single story, 3 bd., 2 ba., living rm., family room, 2-car garage, 1,319 sq. ft. on a 10,000 sq. ft. lot with pool, completely re-painted in and out, tile, windows, carpet, many more upgrades, 35 minutes from JPL, $389,500. 661/257-4350, Alex.

COLORADO, 10+ level acres near Rio Grande, NM border, two adjacent 5-acre lots on St. Hwy 248, will sell one or both for $1K/acre/obo. 626/254-1550.

Vacation Rentals

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, beautiful master bd. suite, sleeps 6. 949/786-6548.

COSTA RICA, Pueblo Real, Quepos, 2 bd.,2 ba. condo, fully equip'd kitch., tv, vcr, slps. 6, air, newly remodeled, pool, tennis, nr. Manuel Antonio, mangroves & monkeys, beach, pictures at *http://www.Photoisland.com,* Andalusian password condo, JPL $85/day. luisalfaro@earthlink.net or 760/723-8522.

HAWAII, Kauai timeshare condo, Sat. thru Sat., you pick the week, other locations also avail., call for weeks in '04. 626/676-1408.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps 4, laundry fac., Low Season rate $105/nite/2, High Season rate $120/nite/2, $15/nite/add'l person. 949/348-8047, or jackandrandy@cox.net.

LAS VEGAS condo/resort, Las Vegas Blvd., 2 bd., 2 ba., penthouse w/jetted tubs, kitchen fully equip'd; resort w/2 pools and lazy river; rent 1 wk., 9/10 to 9/17/03. 626/334-1408.

MAMMOTH, Snowcreek, 2 bd., 2 ba., +loft, slps. 6-8, fully equipped kitchen incl. microwave, D/W, cable TV, VCR, phone, balcony w/view to mtns., Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL discount. 626/798-9222 or 626/794-0455 or valerie@gps.caltech.edu.

OCEANSIDE condo, fully furn., 2 bd., 2 ba., fireplace, full kitch., quiet, relaxing, beautiful beachside setting; BBQ, pool, spa, game rm., great ocean view; easy walk to pier and restaurants, slps 8; weekly or monthly. 909/981-7492, Darlene or dfhauge@yahoo.com.

OCEANSIDE, on the sand, charming 1 bd. condo, panoramic view, walk to pier/harbor, pool/spa, game rm., slps 4. 949/786-6548.

'01 PACE ARROW 34-ft RV, qn. bed, sofa bed & dinette bed, monthly rentals only, $3,000 in advance + $1,000 security deposit, you pay insurance + gas, JPL employees only, no smoking or pets. tahoemike@ earthlink.net or 530/525-7334.

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